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British West Indies Central Sugar Cane Breeding Station, Barbados

SEVENTEENTH
ANNUAL REPORT

For The Year Ending September 30th, 1950.

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I. FOREWORD

ADVISORY COMMITTEE

The seventeenth meeting of the Advisory Committee was held in Jamaica on October 22nd, 25th and 29th, 1950, and the Proceedings of the Committee which have been circulated are appended to this Report.

The organisation and policy of the Station were reviewed and an approved statement placed on record as an appendix to the Proceedings.

The Chairman reported that it had been decided to send fuzz to the Sugar Research Department of the Sugar Manufacturers' Association of Jamaica from crosses of sugar cane parent varieties considered likely to produce progeny resistant to mosaic disease in Jamaica, in the hope that such an arrangement would expedite the solution of the mosaic disease problem in that Island.

The subject of the introduction of sugar cane planting material into the Caribbean area was discussed and the Committee recommended that the B.W.I. Central Plant Quarantine Committee should be asked to offer quarantine facilities to other sugar growing territories in the Caribbean.

C. C. SKEETE,
Director of Agriculture,
Chairman of Advisory Committee.

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British West Indies Central Sugar Cane Breeding Station, Barbados

SEVENTEENTH ANNUAL REPORT FOR THE YEAR ENDING THE 30TH SEPTEMBER, 1950

II. SUGAR CANE BREEDING—SEEDLING SELECTION AND TRIALS

(i) SUGAR CANE BREEDING—B.s.51' and B.52' SERIES

The usual methods were employed in the controlled crossing of various sugar cane varieties at Groves Agricultural Station from October, 1949, to January, 1950. The rainy season was late, the first heavy rain falling on the night of August 31st, when it is estimated that some thirteen inches of rain were received. The late rains resulted in the crop being very backward in October and flowering was scanty and late. Only ninety-six lanterns were employed, of which eighty-nine carried the regular crosses and the remainder were used to make selfs and sib-crosses for the Cytogeneticist.

(ii) SEEDLING RAISING, POTTING AND PLANTING IN THE FIELD NURSERY AND SHORT SEASON FIRST YEAR SEEDLING TRIAL—B.s.51' AND B.52' SERIES

Germination was fair but, as always happens, some crosses for one reason or another failed to produce viable seed. It is estimated that over sixty thousand seedlings germinated, of which thirty-one thousand were potted and twenty-seven thousand survived.

Table I gives, under group heads, a list of the crosses made, the numbers of seedlings germinated, potted and planted in the Field Nursery and the B.s.51' Series First Year Seedling Trial, while Appendix I gives details of all crosses made.

TABLE I

Number of Crosses and Seedlings in each Group germinated, potted and planted in the Field Nursery, B.52' Series and in the First Year Seedling Trial B.s.51' Series.

GROUP	No. of Crosses	No. Germinated	No. Potted	No. Planted in Field Nursery	No. Planted in First Year Trial
S. officinarum x S. spontaneum					
2nd Nobilisation Local	1	6	6	5	—
3rd Nobilisation Glagah	1	—	—	—	—
Noble x Glagah x Dacca	1	—	—	—	—
Noble x Glagah x Local	1	7,500	2,120	1,849	200
Noble x Glagah x Celebes	2	3,860	1,210	1,047	—
S. officinarum x S. spontaneum x S. barberi					
Noble x Chunnee x Local	8	4,781	4,219	3,417	200
Noble x Chunnee x Glagah	13	6,294	3,474	2,653	400
Noble x Chunnee x Local x Glagah	31	12,111	11,191	8,521	1,000
Noble x Chunnee x Celebes x Glagah	5	6,886	1,636	1,248	—
Noble x Chunnee x Celebes x Local	2	5,650	1,100	409	—
Noble x Chunnee x Celebes x Local x Glagah	8	8,899	2,991	2,118	200
S. officinarum x S. spontaneum x S. sinense					
Noble x Glagah x Sinense	1	17	17	17	—
S. officinarum x S. spontaneum x S. barberi x S. sinense					
Noble x Chunnee x Glagah x Local x Sinense	6	1,878	1,878	1,378	—
Noble x Chunnee x Local x Sinense	2	400	250	150	—
S. officinarum x S. spontaneum x S. robustum					
Noble x Glagah x Robustum	2	47	47	45	—
S. officinarum x S. spontaneum x S. barberi x S. robustum					
Noble x Local x Chunnee x Robustum ...	3	1,538	578	238	—
S. officinarum x S. spontaneum x S. barberi x S. sinense x S. robustum					
Noble x Glagah x Local x Chunnee x Sinense x Robustum	1	400	329	200	—
S. officinarum x S. spontaneum x E. arundinaceous					
Noble x Glagah x Erianthus	1	—	—	—	—
Grand Totals	89	60,267	31,046	23,295	2,000

(iii) PLANTING THE FIRST YEAR SEEDLING TRIAL—B.51' SERIES

This series was bred in 1948, potted and planted in the Field Nursery in May, 1949, and from this into the First Year Seedling Trial in October, 1949. Again, all seedlings considered to be too thin for commercial purposes were discarded at this stage, as well as all seedlings that arrowed, unless the seedlings were required for breeding purposes only. This procedure greatly reduces the number of seedlings planted in the First Year Seedling Trial, and saves time and labour during the crop season.

The number of crosses and seedlings in each group planted in the First Year Seedling Trial are given in Table II.

TABLE II

Number of Crosses and Seedlings in each Group planted in the First Year Seedling Trial, October, 1949—B.51' Series

GROUP	No. of Crosses	No. of Seedlings Planted in First year Trial
S. officinarum x S. spontaneum		
2nd Nobilisation Dacca	1	50
2nd „ Glagah	1	15
4th „ „	1	60
S. officinarum x S. barberi		
3rd Nobilisation Chunnee	1	75
S. officinarum x S. robustum		
3rd Nobilisation Robustum	2	110
S. officinarum x S. sinense		
2nd Nobilisation Sinense	1	15
S. officinarum x S. barberi x S. spontaneum		
Noble x Chunnee x Local	12	1,161
Noble x Chunnee x Glagah	15	1,440
Noble x Chunnee x Celebes	2	100
Noble x Chunnee x Glagah x Local	27	3,600
Noble x Chunnee x Local x Celebes	3	286
Noble x Chunnee x Glagah x Local x Celebes	2	230
Noble x Chunnee x Glagah x Celebes	4	465
S. officinarum x S. spontaneum		
Noble x Local x Glagah	4	805
Noble x Glagah	1	80
Noble x Glagah x Celebes	3	240
S. officinarum x S. barberi x S. spontaneum x S. sinense		
Noble x Chunnee x Glagah x Sinense	2	90
Noble x Chunnee x Glagah x Local x Sinense	4	229
Noble x Chunnee x Local x Sinense	1	20
S. officinarum x S. spontaneum x S. sinense		
Noble x Glagah x Sinense	2	35
Noble x Glagah x Local x Sinense	1	60
S. officinarum x S. spontaneum x S. robustum		
Noble x Glagah x Robustum	1	25
S. officinarum x S. barberi x S. robustum		
Noble x Chunnee x Robustum	1	10
S. officinarum x S. barberi x S. spontaneum x S. robustum		
Noble x Chunnee x Local x Robustum	1	50
Grand Totals	93	9,251

(iv) RESULTS OF REAPING THE FIRST YEAR SEEDLING TRIALS—B.s.50' AND B.50' SERIES

These series of seedlings were bred in 1948 and 1947 respectively. The B.50' series was planted in the Field Nursery in May, 1948, and from this into the First year Seedling Trial in October, 1948, while the B.s.50' Series was planted from pots into a short season First Year Seedling Trial in May, 1949. These Trials were cut as plant cane during the past crop season.

As in previous years, the seedlings of each cross were cut, cleaned, bundled and laid out for inspection. Selection was made initially on appearance, and later, on the usual data obtained from each selected bundle.

Forty-two selections were made from the B.s.50' Series and three hundred and forty from the B.50' Series, making a total of three hundred and eighty-two selections altogether. These are being multiplied at Codrington.

Tables III and IV give details of the field and final selections from each cross in the B.50' and B.s.50' Series respectively.

TABLE III

First Year Seedlings—B.50' Series, Field and Final Selections

Cross	No. of Seedlings Cut	No. Field Selected	% Field Selection	No. Finally Selected	% Final Selection
B.3365 x B.34104	135	6	4	3	2
B.3365 x B.4098	250	14	6	10	4
B.3365 x B.4454	63	4	6	1	2
B.3439 x B.37175	15	2	13	1	7
B.3439 x B.40123	180	15	8	11	6
B.3439 x B.40175	120	9	8	7	6
B.3439 x B.4543	102	4	4	3	3
B.3439 x B.45116	80	5	6	4	5
B.3439 x B.45236	200	16	8	10	5
B.3439 x Co.290	95	1	1	—	—
B.34102 x B.34104	361	21	6	14	4
B.34117 x B.4098	150	7	5	4	3
B.35197 x B.34104	600	10	2	4	1
B.35197 x B.4098	300	14	5	6	4
B.35197 x B.41227	80	4	5	1	1
B.35206 x B.34104	20	2	10	1	5
B.35207 x B.34104	120	8	7	4	3
B.35218 x B.38281	10	2	20	—	—
B.35218 x B.4098	200	13	7	7	4
B.35218 x P.O.J.2878	10	—	—	—	—
B.35247 x B.34104	500	6	1	5	1
B.35247 x B.37175	25	2	8	—	—
B.35247 x B.4098	430	8	2	3	1
B.35247 x B.40118	100	3	3	—	—
B.35247 x B.41227	300	7	2	4	1
B.35247 x B.4327	56	1	2	—	—
B.37161 x B.34104	10	1	10	1	10
B.37161 x B.4098	3,224	179	6	91	3
B.37172 x B.34104	25	2	8	1	4
B.37172 x B.4098	5	—	—	—	—
B.37194 x B.4098	20	1	5	1	5
B.38203 x B.34104	250	8	3	4	2
B.38203 x B.4098	50	7	12	2	3
B.38212 x B.4098	100	7	7	5	5
B.38233 x B.34104	120	7	6	4	3
B.38233 x B.4098	250	12	5	6	2
B.39240 x B.4098	20	1	5	1	5
B.39254 x B.4098	40	4	10	3	8
B.40272 x B.4098	25	3	12	1	4
B.40272 x B.44237	90	—	—	—	—
B.40272 x Co.281	282	14	5	10	4
B.40272 x Co.290	40	3	8	1	3
B.41277 x B.4098	20	—	—	—	—
B.4362 x B.H.10(12)	5	1	20	1	20
B.4362 x B.4098	150	17	11	12	8
B.4373 x B.4454	10	—	—	—	—
B.43349 x B.4098	80	4	5	2	3
B.4457 x B.4327	100	2	2	1	1
B.4457 x Co.419	40	2	5	2	5
B.44233 x B.4327	120	4	3	3	2
B.4587 x B.4098	40	3	8	1	3
B.45102 x B.H.10(12)	99	7	7	4	4
B.45166 x B.H.10(12)	60	5	8	2	3
B.45170 x B.37175	9	2	22	—	—
B.45170 x B.4098	350	26	7	19	5
B.45170 x B.4306	10	1	10	—	—
B.45170 x P.O.J.2878	25	1	4	—	—
B.45186 x B.4098	200	16	8	9	5
B.45220 x B.4098	100	3	3	2	2
B.45223 x B.4098	231	10	4	5	2
Co.421 x B.41227	200	11	6	8	4
Co.421 x B.43290	285	10	4	6	2
Co.421 x B.43375	500	33	7	21	4
Co.421 x B.45109	200	8	4	3	2
C.P. 36—158 x B.4098	25	2	8	1	4
P.O.J.2364 x B.34104	50	3	6	1	2
P.O.J.2364 x B.4098	150	9	6	3	2

TABLE IV

First Year Seedlings—B.s.50' Series, Field and Final Selections

Cross	No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Finally Selected	% Final Selection
B.3365 x B.34104	99	3	3	—	—
B.3439 x B.37175	200	7	4	5	3
B.3439 x B.4226	67	5	7	2	3
B.3439 x B.42231	99	3	3	1	1
B.3439 x Co.290	200	4	2	3	2
B.35197 x B.34104	200	1	1	—	—
B.35207 x P.O.J.2878	100	4	4	1	1
B.37172 x B.34104	100	2	2	2	2
B.38203 x B.34104	97	1	1	—	—
B.38233 x B.34104	200	9	5	4	2
B.38233 x B.41211	100	3	3	1	1
B.40272 x Co.290	200	11	6	6	3
B.4145 x B.34104	200	7	4	2	1
B.4145 x B.4098	300	6	2	3	1
B.45170 x B.41227	199	5	3	3	2
Co.421 x B.34104	100	3	3	2	2
Co.421 x B.4098	100	5	5	2	2
Co.421 x B.41211	300	11	4	4	1
Co.421 x B.41227	199	5	3	1	1

As a result of these trials, it has been decided not to repeat any of the following crosses, as the percentage number of seedlings selected from their progenies is not sufficiently large:—

B.34117 x B.4098	B.35247 x B.4098	B.41277 x B.4098
B.35197 x B.34104	B.35247 x B.40118	B.44233 x B.4327
B.35197 x B.41227	B.35247 x B.4327	Co.421 x B.43290
B.35218 x P.O.J.2878	B.38203 x B.34104	Co.421 x B.45109
B.35247 x B.34104	B.40272 x B.44237	P.O.J.2364 x B.34104
B.35247 x B.37175	B.40272 x Co.290	P.O.J.2364 x B.4098

(v) PROGRESS WITH SEEDLINGS OF THE B.s.49' and B.49' SERIES

The four hundred and one seedlings of this series were multiplied at Codrington during 1949, and in October a minor selection reduced the number to two hundred and thirty-nine. The selected seedlings were planted in the Cane Breeding Station Second Year Seedling Trials at the low rainfall station, Codrington, (two trials) and in duplicate trials at the high rainfall stations, Clifton Hall and Henley. A short season trial including the selected seedlings of the B.s.49' Series was planted under irrigation at Codrington in June, 1950. Planting material for this trial was established at Codrington in September, 1949, and was irrigated during dry spells. This trial will be irrigated as it becomes necessary, and will be cut at the end of the next crop.

(vi) PROGRESS WITH SEEDLINGS OF THE B.s.48' AND B.48' SERIES

The selected seedlings of this series were planted in the Cane Breeding Station Second Year Seedling Trials in November, 1948, at the low rainfall station, Codrington (two trials) and in duplicate trials at the high rainfall stations, Bowmanston and Hothersal. These trials were cut during the past

crop season, when twenty-nine selections were made. Four of these are for breeding purposes only, while the remainder are being multiplied at Codrington and will be distributed to the contributing Colonies during October.

The performances of the selected seedlings together with those of the standard varieties are given in Tables V and VI.

TABLE V

Second Year Seedling Trials—Plant Canes B.s48' and B.48' Series

Codrington — Cut 9th, 10th and 13th February, 1950.
Bowmanston — Cut 27th, 28th, 29th and 30th March, 1950

Seedling	Parentage	No. of Canes (Rotten)		% Arrowing		Z.H.R. Brix		Tons Cane per acre	
		Codrington	Bowmanston	Codrington	Bowmanston	Codrington	Bowmanston	Codrington	Bowmanston
GROUP II									
B.37161 ...	Standard ...	98(2)	102(2)	—	—	20.9	21.7	33.41	36.38
B.4098 ...	Standard ...	117(1)	131(3)	2	5	21.5	22.5	36.48	43.43
B.s.4847 ...	B.39207 x B.41211	134(2)	171(1)	28	7	19.3	20.0	38.60	47.13
B.s.4851 ...	B.40105 x B.37193	130(1)	134(3)	3	3	20.2	21.0	34.08	40.33
GROUP III									
B.37161 ...	Standard ...	100(1)	98(5)	—	1	21.5	22.0	33.60	37.75
B.4098 ...	Standard ...	126(2)	115(3)	—	3	21.8	21.5	38.60	37.67
B.4867 ...	B.3354 x B.4098 ...	95(4)	92(4)	1	5	19.4	21.8	36.10	36.29
B.4881 ...	B.3439 x B.3337 ...	104(2)	123(4)	2	1	19.4	20.5	32.54	38.87
B.4888 ...	„ x „ ...	108(1)	115(5)	—	—	19.9	21.2	31.58	39.04
GROUP IV									
B.37161 ...	Standard ...	97(3)	110(4)	1	2	20.8	21.9	32.74	37.84
B.4098 ...	Standard ...	125(2)	125(1)	1	5	22.1	22.8	38.40	38.27
B.4893 ...	B.3439 x B.3337 ...	107(3)	151(0)	—	1	20.7	22.2	28.61	38.61
B.4895 ...	„ x „ ...	144(0)	214(3)	—	20	22.1	22.3	34.85	42.48
B.48106 ...	B.3439 x Co.419 ...	109(6)	155(2)	—	7	22.3	23.6	26.11	38.61
B.48117 ...	„ x „ ...	126(2)	131(2)	1	11	20.4	21.3	33.12	37.75
GROUP V									
B.37161 ...	Standard ...	123(3)	118(3)	1	1	20.3	21.5	41.66	42.83
B.4098 ...	Standard ...	108(2)	131(3)	—	9	22.2	22.3	41.95	42.73
B.48125 ...	B.34102 x B.3337	121(7)	127(16)	5	31	20.9	22.3	38.88	39.47
B.48126 ...	„ x „	100(5)	99(4)	4	1	20.7	22.1	38.30	40.68
GROUP VI									
B.37161 ...	Standard ...	113(1)	117(8)	—	—	21.3	20.6	38.98	38.87
B.4098 ...	Standard ...	142(2)	129(4)	1	3	21.8	20.6	42.05	44.03
*B.48165 ...	B.35197 x B.40256	102(1)	153(2)	24	28	17.9	20.1	31.10	41.11
B.48177 ...	B.35197 x B.42231	106(3)	137(4)	15	11	22.1	20.9	36.86	44.98
B.48179 ...	„ x „	111(4)	134(5)	4	13	20.3	20.8	36.38	42.48
GROUP VIII									
B.37161 ...	Standard ...	102(2)	122(2)	—	1	20.7	21.5	35.23	38.70
B.4098 ...	Standard ...	129(4)	115(4)	—	13	22.0	21.5	36.65	39.73
B.48209 ...	B.35218 x B.41276	111(2)	154(5)	—	5	20.8	20.6	27.07	36.89
B.48228 ...	B.35247 x B.3337	160(2)	179(3)	3	14	19.7	20.6	33.41	45.49
B.48231 ...	„ x „	162(2)	183(4)	3	2	19.9	21.3	35.14	43.69

* Selected for the breeding plots at Groves only.

TABLE VI

Second Year Seedling Trials — Plant Canes B.s.48' and B.48' Series.

Codrington — Cut 17th — 21st February, 1950.
Hothersal — Cut 16th — 20th March, 1950.

Seedling	Parentage	No. of Canes (Rotten)		% Arrowing		Z.H.R. Brix		Tons Cane per acre	
		Codrington	Hothersal	Codrington	Hothersal	Codrington	Hothersal	Codrington	Hothersal
GROUP IX									
B.37161 ...	Standard ...	87(2)	128(2)	—	2	21.4	20.3	22.18	40.59
B.4098 ...	Standard ...	119(1)	147(3)	—	5	23.0	22.1	25.54	44.63
B.48251 ...	B.37161 x Co.419	100(3)	122(4)	4	1	20.7	20.1	27.74	46.10
B.48259 ...	B.38203 x B.41211	111(3)	159(1)	2	1	21.3	20.2	24.67	39.30
GROUP XI									
B.37161 ...	Standard ...	89(7)	91(1)	—	5	21.2	20.2	28.13	33.11
B.4098 ...	Standard ...	107(5)	134(3)	—	6	22.6	21.2	26.02	38.18
B.48330 ...	B.4145 x B.4098	112(5)	105(2)	1	3	21.6	21.6	32.64	39.22
B.48332 ...	„ x „	104(1)	138(2)	—	4	21.2	20.5	25.92	34.23
GROUP XII									
B.37161 ...	Standard ...	93(2)	108(0)	—	—	21.1	20.8	31.30	35.86
B.4098 ...	Standard ...	140(1)	132(5)	—	5	22.2	20.8	34.21	35.86
*B.48350 ...	B.42279 x B.41276	161(2)	204(1)	34	45	20.9	18.9	32.74	40.68
B.48351 ...	B.42304 x B.37193	92(4)	137(0)	3	—	20.6	19.6	23.81	39.30
*B.48357 ...	B.4455 x B.H.10(12)	99(2)	133(3)	17	15	19.7	19.6	27.65	38.10
*B.48360 ...	B.4457 x B.4098	77(1)	89(3)	36	35	20.7	18.8	25.54	29.50
GROUP XIII									
B.37161 ...	Standard ...	83(1)	114(4)	—	8	21.2	20.4	24.00	37.58
B.4098 ...	Standard ...	106(3)	142(5)	—	7	21.5	20.8	27.84	43.43
B.48372 ...	Co.421 x B.4098 ...	122(3)	156(5)	2	18	20.3	20.3	30.82	39.48
B.48375 ...	Co.421 x B.41211	138(1)	139(4)	2	13	23.2	22.8	31.39	39.22
B.48384 ...	Co.421 x B.41211	129(2)	213(6)	—	—	21.4	22.0	24.48	37.07
GROUP XIV									
B.37161 ...	Standard ...	86(1)	84(2)	—	3	21.3	20.7	25.34	32.59
B.4098 ...	Standard ...	112(2)	119(4)	—	5	21.8	20.4	27.55	36.64
B.48392 ...	Co.421 x B.41211	135(1)	121(0)	5	2	20.8	21.0	35.42	40.33

* Selected for the breeding plots at Groves only.

(vii) PROGRESS WITH SEEDLINGS OF THE B.s.47' AND B.47' SERIES

These seedlings were cut as plant cane during the 1949 crop season in the Cane Breeding Station Second Year Seedling Trials. They were cut as first ratoon cane during the past crop season at the high rainfall stations, Todds and Drax Hall, when ten of the forty-eight selections were discarded on their ratoon performances.

The seedlings of these series which appeared to show most promise under Barbados conditions were multiplied at Codrington during 1949, and in November they were planted in Third Year Seedling Trials which cover all the main ecological categories and soil groups. These trials will be cut during the 1951 crop season.

The performances of the selected seedlings together with those of the standards are given in Tables VII and VIII.

Table VII

Second Year Seedling Trials — First Ratoons B.s. 47' and B.47' Series.
Todds — Cut 31st March, and 3rd and 4th April, 1950.

Seedling	Parentage	No. of Canes (Rotten)	% Arrowing	Z.H.R. Brix	Tons Cane per acre
GROUP I					
B.37161	Standard	150(2)	7	20.6	47.64
B.4098	Standard	165(5)	31	21.4	40.04
B.s.4710	B.35207 x P.O.J.2878 ...	147(5)	41	21.2	31.99
B.s.4711	„ x „ ...	165(10)	29	21.1	42.05
B.s.4724	B.35247 x B.3337 ...	175(3)	13	21.2	36.55
B.s.4726	B.38233 x B.34104 ...	190(4)	16	21.5	44.46
GROUP II					
B.37161	Standard	161(6)	6	21.3	41.36
B.4098	Standard	142(10)	9	21.5	35.09
B.s.4733	B.4145 x B.34104 ...	181(4)	3	21.6	46.87
B.s.4738	Co.421 x B.4098 ...	188(2)	26	20.9	48.25
B.s.4743	„ x „ ...	166(7)	24	18.8	40.33
B.s.4744	„ x „ ...	194(1)	2	21.6	54.35
B.s.4746	Co.421 x B.41211 ...	170(4)	6	20.8	40.47
B.s.4747	„ x „ ...	200(7)	20	21.3	49.68
GROUP III					
B.37161	Standard	166(4)	9	20.8	43.86
B.4098	Standard	178(10)	11	22.4	40.76
B.4755	B.3365 x B.3337 ...	169(3)	3	21.7	43.22
B.4764	B.34102 x B.34104 ...	143(10)	26	22.2	37.32
B.4765	„ x „ ...	144(11)	14	22.8	36.98
GROUP IV					
B.37161	Standard	155(10)	9	20.5	41.62
B.4098	Standard	173(5)	9	21.8	38.36
B.4781	B.37161 x B.3337 ...	164(5)	—	21.5	49.42
B.4788	B.37161 x B.4098 ...	168(5)	10	21.4	39.18
B.4789	B.40272 x B.37193 ...	132(1)	7	20.6	28.98
GROUP V					
B.37161	Standard	170(10)	1	21.5	52.20
B.4098	Standard	164(4)	9	21.4	41.80
B.47112	B.3354 x B.34104 ...	126(3)	1	21.0	53.23
B.47135	B.34102 x B.3337 ...	118(2)	1	20.9	40.04
GROUP VI					
B.37161	Standard	148(5)	4	21.4	44.03
B.4098	Standard	163(3)	2	21.9	42.14
B.47147	B.3354 x B.34104 ...	162(4)	5	21.1	44.63
B.47151	B.35197 x B.41227 ...	205(10)	1	22.1	46.18
B.47162	B.35207 x B.41211 ...	190(4)	1	20.8	45.32
B.47179	B.35247 x B.3337 ...	206(3)	8	20.8	53.32
GROUP VII					
B.37161	Standard	137(5)	4	20.8	43.52
B.4098	Standard	170(1)	6	21.3	44.72
B.47204	B.35247 x Co.419 ...	159(1)	1	20.8	45.66
B.47214	B.37161 x B.4098 ...	158(5)	—	20.7	50.28
GROUP VIII					
B.37161	Standard	147(2)	1	20.7	50.22
B.4098	Standard	159(3)	5	21.7	42.14
B.47225	B.37161 x P.O.J.2878 ...	170(3)	24	21.8	47.47
B.47233	„ x „ ...	132(6)	1	20.0	47.30
B.47294	B.40272 x Co.290 ...	98(76)	1	20.3	18.61*

* Damaged by rats.

Table VIII

Second Year Seedling Trials — First Ratoons B.47' Series.
Drax Hall — Cut 13th, 14th & 17th April, 1950.

Seedling	Parentage	No. of Canes (Rotten)	% Arrowing	Z.H.R. Brix	Tons Cane per acre
GROUP IX					
B.37161	Standard	164(2)	7	20.9	40.16
B.4098	Standard	163(1)	6	22.2	42.48
B.47216	B.37161 x B.4098 ...	120(2)	1	20.6	39.18
B.47217	„ x „ ...	127(3)	2	20.8	36.03
B.47256	B.39254 x B.34104 ...	145(1)	—	20.2	35.60
GROUP X					
B.37161	Standard	120(3)	—	21.9	49.44
B.4098	Standard	176(5)	8	21.7	44.55
B.47258	B.39254 x B.34104 ...	159(5)	2	21.7	44.29
B.47262	B.4096 x B.3337 ...	144(3)	2	21.0	40.51
B.47298	B.4111 x B.34104 ...	147(4)	1	21.8	32.08
GROUP XI					
B.37161	Standard	119(4)	10	21.0	40.39
B.4098	Standard	148(4)	4	22.4	35.52
B.47306	Co.421 x B.34104 ...	167(4)	9	19.8	38.53
B.47310	Co.421 x B.37193 ...	172(0)	5	20.2	47.73
B.47312	„ x „ ...	141(2)	3	20.6	36.72
B.47314	„ x „ ...	195(2)	6	22.2	38.61
B.47320	Co.421 x B.41227 ...	166(5)	9	22.2	33.54
GROUP XII					
B.37161	Standard	136(5)	14	21.6	40.16
B.4098	Standard	171(3)	14	22.6	40.59
B.47348	B.34102 x B.34104 ...	148(4)	2	21.2	30.27
GROUP XIII					
B.37161	Standard	154(6)	3	21.7	41.71
B.4098	Standard	144(3)	1	21.9	39.65
B.47361	B.35207 x P.O.J.2878 ...	115(4)	18	21.2	28.55
B.47364	„ x „ ...	141(2)	3	21.1	36.12
B.47379	B.37161 x B.4098 ...	116(1)	—	21.4	36.46
GROUP XIV					
B.37161	Standard	121(6)	5	21.3	35.78
B.4098	Standard	145(3)	3	22.4	40.47
B.47380	B.37161 x B.4098 ...	122(6)	—	23.6	31.22
B.47386	B.37161 x P.O.J.2878 ...	129(17)	1	22.4	30.79
B.47397	B.40272 x B.37193 ...	135(4)	2	21.4	39.56
B.47399	B.40272 x Co.290 ...	144(4)	1	21.9	34.74
GROUP XV					
B.37161	Standard	119(2)	5	22.2	40.68
B.4098	Standard	173(3)	10	23.0	43.43
B.47410	B.40272 x Co.290 ...	160(2)	19	21.8	32.34
B.47419	P.O.J.2878 x B.34104 ...	167(2)	1	22.1	40.08

(viii) PROGRESS WITH SEEDLINGS OF THE B.46' AND EARLIER SERIES

Third Year and Select Seedling Trials

A. The Seedlings Tested

1. *Third Year Seedling Trials*

Plant Canes:— B.4502, B.4503, B.4504, B.4506, B.4556, B.4572, B.4596,

B.45137, B.45151, B.45152, B.4604, B.4681, B.4691, B.46102, B.46136, B.46223, B.46232, B.46284, B.46288, B.46364, B.46394, B.46397 and S. 45.

First Ratoons:— B.41211, B.41227, B.4362, B.43337, B.43391, B.45188, B.45189, B.45200, B.45224, B.45267, B.45270 and B.45292.

Second Ratoons:— B.37172, B.4335, B.4408, B.4425, B.4466, B.4491, B.44101, B.44111, B.44165, B.44182, B.44244, B.44254, B.44269, B.44278, B.44279 and B.44341.

2. *Select Seedling Trials*

Plant Canes:— B.37161, B.4098, B.41211, B.41227, B.43391 and B.44341.

First Ratoons:— B.37161, B.41211, B.41227, B.43337 and B.43391.

Third Ratoons:— B.34104, B.37161, B.4098, B.41211 and B.41227.

B. *An Ecological Classification of the Trials—Turner's Classification*

This classification was proposed by Turner after a study of the sugar cane soils of the British West Indian Colonies and is as follows:—

Group I:— Soils with a natural tilth and free natural drainage which require neither to be ploughed nor drained.

Group II:— Soils with a tilth which can be improved by ploughing, but which do not require to be drained.

(a) *Low Rainfall Areas*

Select Seedling Trials

Plant Canes .. .. Ealing Grove

(b) *Intermediate Rainfall Areas*

Third Year Seedling Trials

Plant Canes .. .. Yorkshire & Pickerings
First Ratoons .. .. Waterford

Select Seedling Trials

Plant Canes .. .. Warrens & Small Ridge

(c) *High Rainfall Areas*

Third Year Seedling Trials

Plant Canes .. .. Colleton & Kendal
First Ratoons .. .. Claybury & Portland
Second Ratoons .. .. Portland

Select Seedling Trials

Plant Canes .. .. Portland & Mount
First Ratoons .. .. Guinea
Third Ratoons .. .. Lancaster & Mt. Wilton

Group III:— Soils which require to be drained but are preferably left unploughed.

Group IV:— Soils with a poor natural tilth in which a tilth can be created by ploughing, but which require to be drained to maintain their tilth.

(a) *Low Rainfall Areas*

Third Year Seedling Trials

Plant Canes .. .. Bushy Park

(b) *Intermediate Rainfall Areas*

Third Year Seedling Trials

Plant Canes .. .. Carrington

Select Seedling Trials

Plant Canes .. .. Bulkeley

C. Rainfall During the Season.

Table IX

Month	1927—28 to 1946—47	1947—48	1948—49	1949—50
January	3.11	3.66	3.01	1.25
February	1.59	1.39	1.30	1.04
March	1.63	0.66	2.83	1.37
April	2.24	1.23	0.57	1.43
May	2.76	1.11	2.91	1.96
June	4.36	7.53	5.15	6.13
July	6.59	7.99	9.54	2.95
August	6.34	2.31	10.34	13.45
September	7.38	2.85	11.72	11.13
October	7.75	5.09	7.49	13.31
November	9.77	2.70	10.53	3.36
December	4.46	2.28	4.42	3.51
January	3.11	3.01	1.25	6.06
February	1.59	1.30	1.04	1.95
March	1.46	2.83	1.37	2.86
Totals	64.14	45.94	73.47	71.76

It will be noted from the above table that the rainfall for the first five months of 1949 was well below the average. Reasonable rains were received from the middle of June to early July, after which the weather again became very dry until the night of 31st August, when a passing tropical disturbance resulted in a fall estimated at approximately thirteen inches. Most of this was received in about six hours and caused floods and some erosion in places. The rainfall for September and October was again above average, and good rains, well distributed, were received during November and December, 1949, and the early months of 1950.

As a result of this unusual rainfall, all fields of cane were very backward up to the end of September, and flowering was very scanty. However, with the well distributed rains running into 1950, cane growth continued into the crop season, and with good juices, a record sugar crop of approximately 158,000 tons of sugar was made.

The effect of these unusual conditions on the results of the trials was that varieties which would normally have flowered early and freely, flowered late in the season and sparingly or not at all. This undoubtedly enhanced the performances of some of the varieties in comparison with others which do not flower so freely. However, the results will indicate the potentialities of the various varieties under conditions which do not favour flowering.

TABLE X

Soil Type:—Group II (a) Select Seedling Trials—Plant Canes.
Ealing Grove—Cut 9th March, 1950.

Variety	Tons Cane per acre	Tons Sucrose per acre	% Sucrose in Cane	Quotient of Purity	No. of Rotten Canes per Plot
B.37161	34.85	5.28	15.2	90.5	9
B.4098	31.80	5.03	15.8	87.9	12
B.41211	39.33	6.03	15.3	88.2	9
B.41227	34.40	5.73	16.7	88.8	7
B 44341	30.98	5.15	16.6	89.4	11

A difference between mean yields of ± 2.38 tons cane per acre and ± 0.33 tons sugar per acre may be considered significant.

In this trial, B.41211 was significantly better than any of the other varieties tried on yield of cane. B.37161 and B.41227 were significantly better than B.44341 and B.34104.

On sugar yield, B.41211 just failed to be significantly better than B.41227. Both of these varieties significantly exceeded the other three. The differences between the mean sugar yields of B.37161, B.44341 and B.4098 are insignificant at the five percent. point.

TABLE XI

Soil Type:—Group II (b) Third Year Seedling Trials—Plant Canes
Intermediate Rainfall, Black Soil Centres.
Yorkshire—Cut 22nd & 23rd February, 1950.
Pickerings—Cut 27th & 28th February, 1950.

Variety	Tons Cane per acre		Z.H.R. Brix		% Sucrose in Juice		No. of Rotten Canes per Plot	
	York-shire	Picker-ings	York-shire	Pick-erings	York-shire	Pick-erings	York-shire	Pick-erings
B.37161	35.22	38.44	20.2	20.5	16.9	17.2	3	5
B.4098	36.87	40.61	21.3	20.9	18.9	18.1	2	3
B.4502	37.09	33.30	20.3	20.6	18.2	18.6	1	5
B.4503	37.78	38.84	17.9	18.6	14.1	15.8	2	4
B.4504	33.22	34.62	19.1	20.7	16.7	17.4	5	14
B.4506	35.32	31.66	19.7	19.6	16.5	15.9	2	4
B.4556	36.08	31.44	20.9	20.2	18.0	18.3	2	26
B.4572	34.44	41.24	21.5	21.2	17.8	18.9	1	5
B.4596	34.53	33.76	19.0	19.5	14.9	15.6	2	2
B.45137	31.72	33.71	21.4	21.3	17.8	18.4	4	7
B.45151	41.05	40.99	21.3	21.5	19.6	19.3	3	6
B.45152	44.71	42.79	21.1	20.8	18.8	17.7	0	2
B.4604	35.77	38.18	19.7	19.9	17.0	17.3	5	7
B.4681	36.17	35.08	22.0	21.3	18.5	17.9	3	10
B.4691	36.54	41.15	20.1	19.4	16.5	16.8	1	6
B.46136	31.72	33.59	21.0	21.3	17.4	17.9	2	3
B.46223	43.21	44.66	20.7	20.6	17.6	17.5	0	5
B.46232	31.62	33.83	17.8	18.2	15.4	15.1	1	3
B.46284	34.20	37.34	20.5	20.7	17.6	17.3	0	4
B.46288	33.33	35.61	20.6	19.5	17.7	17.1	6	12
B.46364	35.26	35.79	20.4	20.3	17.4	18.0	2	2
B.46394	32.13	29.10	21.7	21.1	17.7	18.5	3	4
B.46397	46.45	47.76	20.9	20.3	17.8	16.8	2	6
S.45	36.50	39.43	20.1	20.2	16.9	17.4	4	3

The following differences between mean yields may be considered significant:—
± 4.53 tons cane per acre at Yorkshire
± 4.20 „ „ „ „ „ Pickerings.

At Yorkshire, the varieties B.46397, B.45152, B.46223 and B.45151 significantly exceeded the cane yields given by the standard varieties B.37161 and B.4098. As will be seen from the yield Table, many of the other varieties gave yields comparable with those given by the standards. The best juice quality as judged by the percent. sucrose in juice was given by the variety B.45151. Other varieties with excellent juices were B.4098, B.45152, B.4681, B.4502 and B.4556.

At Pickerings, B.46397 was the only variety which significantly exceeded the yields of cane given by the standard varieties. B.46223 was significantly better than B.37161, but not B.4098. Good yields were also given by B.4572, B.45151, B.45152 and B.4691. Again, the best juice quality was given by B.45151, while others with very good juices were B.4098, B.4502, B.4556, B.4572, B.45137, B.46364 and B.46394. The variety B.4556 suffered some rat damage at Pickerings, while S.45 was beginning to rot at Yorkshire, particularly where it had been attacked by moth borer. However, this variety was quite sound at Pickerings.

TABLE XII

Soil Type:—Group II (b) Third Year Seedling Trials—First Ratoons

Waterford—Cut 15th & 16th February, 1950

Variety	Tons Cane per Acre	Z.H.R. Brix	No. of Rotten Canes per Plot
B.37161	25.13	21.4	1
B.37161(a)	24.53	21.0	1
B.37161(b)	23.28	21.7	3
B.4098	28.15	22.5	3
B.4098(a)	26.89	22.3	2
B.4098(b)	28.16	22.1	4
B.41211	29.31	20.9	2
B.41227	31.91	21.2	5
B.4362	25.58	22.6	4
B.43391	29.12	20.6	1
B.45188	21.99	20.4	2
B.45189	22.73	22.4	1
B.45224	22.66	21.2	4
B.45267	31.79	22.4	3
B.45270	23.33	20.3	7

A difference of ± 3.43 tons cane per acre may be considered significant.

In this trial, B.41227 gave the heaviest yield of ratoon cane, followed by B.45267, B.41211 and B.43391. All of these varieties proved to be significantly better than B.37161, but only the first two were significantly better than B.4098. B.4362 also gave a good yield of ratoon cane, and in addition has an excellent juice. B.45267 is very thin and tends to hold its trash so firmly that it cannot be considered for commercial purposes in Barbados in spite of a very good juice. B.45189 and B.4098 also had good juices in this trial.

TABLE XIII

Soil Type:—Group II (b) Select Seedling Trials—Plant Canes

Warrens—Cut 25th February, 1950 *Small Ridge—Cut 16th March, 1950*

Variety	Tons Cane per Acre		Tons Sucrose per Acre		% Sucrose in Juice		Quotient of Purity		No. of Rotten Canes per Plot	
	Warrens	Small Ridge	Warrens	Small Ridge	Warrens	Small Ridge	Warrens	Small Ridge	Warrens	Small Ridge
B.37161 ...	31.18	35.07	4.36	5.28	14.0	15.1	89.5	91.4	3	9
B.4098 ...	31.19	32.98	4.41	5.31	14.1	16.1	87.7	90.3	6	7
B.41211 ...	37.28	43.34	5.38	6.48	14.4	15.0	88.3	88.3	3	9
B.41227 ...	32.08	36.29	4.67	6.05	14.6	16.7	88.0	88.5	6	8
B.44341 ...	30.35	30.33	4.64	4.77	15.3	15.7	89.2	90.1	5	8

The following differences between yields may be considered significant:—
± 2.31 tons cane per acre at Warrens
± 0.44 tons sugar per acre at Warrens
± 2.80 tons cane per acre at Small Ridge
± 0.46 tons sugar per acre at Small Ridge.

In both of these trials, B.41211 gave the heaviest yield of plant cane, significantly outyielding all of the other varieties tried. B.41227 gave the second heaviest yield of cane but was not significantly better than any of the others at Warrens, although it proved to be better than B.44341 and B.4098 at Small Ridge. B.41211 also gave the heaviest yield of sugar at both stations, significantly outyielding all others at Warrens, and all but B.41227 at Small Ridge. There was no significant difference between the mean sugar yields of B.37161, B.4098, B.41227 and B.44341 at Warrens, but at Small Ridge B.41227 was significantly better than the other three, and B.37161 and B.4098 were significantly better than B.44341.

TABLE XIV

Soil Type:—Group II (c) Third Year Seedling Trials—Plant Canes

Colleton—Cut 21st & 22nd March, 1950

Kendal—Cut 26th & 27th April, 1950

Variety	Tons Cane per Acre		Z.H.R. Brix		% Sucrose in Juice		No. of Rotten Canes per Plot	
	Colleton	Kendal	Colleton	Kendal	Colleton	Kendal	Colleton	Kendal
B.37161 ...	38.50	44.71	20.3	22.0	17.2	18.9	5	7
B.4098 ...	41.54	46.17	21.5	22.9	17.9	19.2	9	13
B.4502 ...	37.47	41.60	22.0	23.2	19.7	19.9	5	18
B.4503 ...	39.73	39.78	20.0	21.1	17.0	18.2	7	11
B.4504 ...	36.72	41.21	21.6	22.7	17.9	18.9	11	19
B.4506 ...	36.22	39.26	20.3	21.2	17.1	18.4	5	10
B.4556 ...	33.46	41.87	20.9	21.8	18.3	18.8	11	22
B.4572 ...	41.85	45.26	20.1	23.2	19.1	19.9	5	6
B.4596 ...	44.07	49.32	18.2	21.6	15.3	18.1	5	11
B.45137 ...	35.00	39.25	21.7	23.1	19.0	20.7	9	20
B.45151 ...	44.61	50.69	21.9	22.1	19.6	21.7	5	10
B.45152 ...	45.02	51.67	21.7	23.0	19.1	20.7	4	6
B.4604 ...	42.84	52.14	21.1	21.6	17.8	19.0	12	10
B.4681 ...	37.26	50.68	22.2	22.3	19.1	19.6	18	32
B.4691 ...	39.36	31.21	20.0	21.7	16.8	19.1	4	9
B.46102 ...	—	49.56	—	21.5	—	18.7	—	10
B.46136 ...	36.62	45.44	21.4	22.5	18.0	19.3	7	7
B.46223 ...	43.55	53.44	21.7	22.3	18.3	18.8	3	9
B.46232 ...	39.09	39.56	18.7	19.7	15.7	17.7	3	11
B.46284 ...	37.68	37.75	21.2	22.4	18.1	19.2	6	9
B.46288 ...	34.23	34.65	20.3	22.0	16.9	19.7	11	13
B.46364 ...	43.08	46.41	21.1	22.5	18.6	20.2	5	6
B.46394 ...	30.88	25.20	21.9	21.7	18.1	19.3	9	9
B.46397 ...	44.69	—	21.0	—	17.3	—	3	—
S.45 ...	44.37	44.99	20.9	22.0	16.9	18.0	8	12

The following differences between mean yields may be considered significant:—
± 4.04 tons cane per acre at Colleton
± 5.62 „ „ „ „ „ Kendal.

At Colleton, none of the varieties tried were significantly better than the standard variety B.4098. The varieties B.45152, B.45151, B.4596, B.46397, B.46223, B.46364, S.45 and B.4604 proved to be significantly better than the standard variety B.37161, while the majority of the varieties tried gave yields comparable with those given by the standards. B.45151 and B.4502 gave the best juice of any of the varieties tried. Other varieties with very good juices were B.4556, B.4572, B.45137, B.45152, B.4681, B.46136, B.46223, B.46284, B.46364 and B46397. In this trial the canes of S.45 were beginning to rot, which probably accounts for the poor quality of its juice.

At Kendal, B.46223 and B.4604 gave yields of cane which were significantly better than those given by the standard varieties. Other varieties which gave outstanding cane yields, but which were not significantly better than those of the standards were B.4596, B.45151, B.45152, B.4681 and B.46102. In this trial again, the majority of the varieties gave yields which were more or less comparable with those given by the standard varieties. Here again, the juice quality of the variety B.45151 was outstanding. Other varieties with very good juices were B.4502, B.4572, B.45137, B.45152, B.46364 and B.46394. Taking into account the lateness of the season, the number of rotten canes found in the plots was not unduly high.

Table XV

Soil Type:—Group II (c) Third Year Seedling Trials—First Ratoons

Claybury—Cut 11th & 12th April, 1950
Portland—Cut 1st & 2nd March, 1950

Variety	Tons Cane per Acre		Z.H.R. Brix		No. of Rotten Canes per Plot	
	Claybury	Portland	Claybury	Port-land	Claybury	Port-land
B.37161	30.99	38.27	20.7	19.2	6	2
B.37161(a)	36.00	39.96	20.7	19.2	7	2
B.37161(b)	—	39.45	—	19.2	—	5
B.4098	36.73	39.78	21.4	19.2	6	3
B.4098(a)	—	40.30	—	20.0	—	4
B.41211	39.75	49.50	21.3	18.3	10	5
B.41211(a)	—	47.08	—	17.4	—	4
B.41227	46.86	48.12	21.2	19.9	8	4
B.41227(a)	—	49.60	—	19.7	—	6
B.41227(b)	—	49.87	—	19.4	—	5
B.4362	35.87	45.22	22.6	20.7	10	5
B.43337	42.14	49.17	20.6	18.3	3	5
B.43391	44.49	46.55	20.5	18.6	6	3
B.45188	37.29	—	20.4	—	9	—
B.45189	32.56	—	22.4	—	6	—
B.45200	28.43	—	21.3	—	5	—
B.45224	36.49	39.47	20.3	18.5	20	18
B.45267	38.22	42.40	20.5	19.7	12	6
B.45270	39.04	—	20.9	—	1	—
B.45292	30.26	—	21.6	—	6	—

The following differences between mean yields may be considered significant:—
± 4.67 tons cane per acre at Claybury
± 4.43 „ „ „ „ „ Portland.

At Claybury, B.41227 gave the heaviest yield of ratoon cane, followed by B.43391 and B.43337, all of which significantly outyielded the standard

varieties. Other varieties which outyielded the standards were B.41211, B.45188, B.45267 and B.45270. The variety B.4362 besides giving quite a reasonable yield has an excellent juice. It gave the best quality juice, followed by B.45189.

At Portland, B.41227, B.41211, B.43337, B.43391 and B.4362 all gave cane yields which significantly exceeded those given by the standard varieties. B.4362 again gave the best quality juice, but none of the varieties were ripe when the trial was cut.

TABLE XVI

Soil Type:—Group II (c) Third Year Seedling Trials—Second Ratoons

Portland—Cut 3rd & 6th March, 1950

Variety	Tons Cane per Acre	Z.H.R. Brix	No. of Rotten Canes per Plot
B.37161	41.59	20.3	3
B.4098	42.36	19.4	2
B.37172	30.36	20.7	3
B.4335	38.84	18.8	4
B.4408	38.31	17.9	4
B.4425	38.95	19.4	6
B.4466	45.01	19.3	3
B.4491	37.71	19.8	6
B.44101	40.46	19.2	6
B.44111	41.07	19.5	10
B.44165	33.67	19.7	3
B.44182	41.11	18.7	4
B.44244	39.47	19.2	1
B.44254	36.53	18.8	4
B.44269	36.81	18.9	4
B.44278	42.69	18.8	2
B.44279	38.63	20.2	3
B.44341	43.41	19.7	4

A difference of ± 4.17 tons cane per acre between mean yields may be considered significant.

In this trial, B.4466 gave the heaviest yield of ratoon cane, but was not significantly better than either of the standard varieties. B.44101, B.44111, B.44182, B.44278 and B.44341 also gave good yields of ratoon cane. In this trial none of the varieties were ripe at the time of cutting, and the juice qualities were relatively poor. B.37172 gave the best quality juice, followed by B.37161 and B.44279.

Table XVII

Soil Type:—Group II (c) Select Seedling Trials—Plant Canes

Portland—Cut 8th March, 1950
Mount—Cut 18th April, 1950

Variety	Tons Cane per Acre		Tons Sucrose per Acre		% Sucrose in Cane		Quotient of Purity		No. of Rotten Canes per Plot	
	Portland	Mount	Portland	Mount	Portland	Mount	Portland	Mount	Portland	Mount
B.37161	37.88	37.12	5.74	5.69	15.2	15.3	91.8	91.8	2	19
B.4098	41.53	41.00	6.16	6.38	14.9	15.6	89.6	89.3	7	60
B.41211	46.23	47.92	6.84	7.68	14.7	16.0	88.6	89.9	4	27
B.41227	39.41	45.45	6.10	7.49	15.5	16.3	89.3	90.2	4	30
B.43391	—	42.30	—	6.42	—	15.2	—	89.7	—	20
B.44341	35.44	—	5.51	—	15.5	—	90.1	—	2	—

The following differences between mean yields may be considered significant:—
Difference between the mean yields of cane and sugar were not significant at Portland.
± 4.61 tons cane per acre at the Mount
± 0.82 tons sugar per acre at the Mount.

At Portland, B.41211 gave the heaviest yield of plant cane followed by B.4098, but the differences between mean yields cannot be shown to be significant. B.41211 gave the heaviest yield of sugar followed by B.4098, but here again, the differences between the mean yields proved to be insignificant.

At the Mount, B.41211 gave the heaviest yield of cane and sugar, and was significantly better than all other varieties except B.41227. B.41227 and B.43391 were significantly better than B.37161 on cane yield. B.41227 significantly exceeded B.4098, B.43391 and B.37161 on sugar. There was no significant difference between the three latter varieties.

Table XVIII

Soil Type:—Group II (c) Select Seedling Trials—First Ratoons

Guinea—Cut 12th April, 1950

Variety	Tons Cane per Acre	Z.H.R. Brix	No. of Rotten Canes per Plot
B.37161	40.12	21.2	7
B.41211	49.31	20.8	8
B.41227	41.88	21.0	14
B.43337	41.23	20.2	11
B.43391	42.29	20.1	8

A difference of ± 3.15 tons cane per acre may be considered significant.

In this trial, B.41211 gave the heaviest yield of ratoon cane greatly and significantly exceeding all the other varieties tried. B.43391 gave the next heaviest yield of ratoon cane, but there was little to choose between the last four varieties. B.37161 gave the best juice quality followed by B.41227 and B.41211. There was little to choose between the juice qualities of B.43337 and B.43391.

Table XIX

Soil Type:—Group II (c) Select Seedling Trials—Third Ratoons

Lancaster—Cut 8th February, 1950
Mount Wilton—Cut 4th May, 1950

Variety	Tons Cane per Acre		Z.H.R. Brix		No. of Rotten Canes per Plot	
	Lancaster	Mt. Wilton	Lancaster	Mt. Wilton	Lancaster	Mt. Wilton
B.34104	27.26	35.29	17.8	22.8	3	20
B.37161	28.06	30.72	17.6	22.0	4	16
B.4098	31.23	36.79	18.6	22.4	3	18
B.41211	34.37	40.72	17.6	22.4	3	17
B.41227	30.86	38.64	17.5	22.8	2	16

The following differences between mean yields may be considered significant:—

Lancaster — Insignificant.

Mount Wilton ± 4.28 tons cane per acre.

The trial at Lancaster was cut very early in crop and, for the first time during the course of this trial, B.41211 was not damaged to any extent by rats or villagers. It is, therefore, not surprising to find that it gave the heaviest yield of cane. This was followed by B.4098 and B.41227, but the differences between the mean yields of any of the varieties cannot be shown to be significant. B.4098 gave the best juice quality, but there was little to choose between the juice qualities of any of the other varieties tried.

At Mount Wilton, B.41211 gave the heaviest yield of ratoon cane, and significantly exceeded B.34104 and B.37161. B.41227, B.4098 and B.34104 all exceeded B.37161 on cane yield. B.34104 and B.41227 had the best juices and B.37161 the poorest.

TABLE XX

Soil Type:—Group IV (a) Third Year Seedlings—Plant Canes.
Bushy Park—Cut 9th & 10th March, 1950

Variety	Tons Cane per Acre	Z.H.R. Brix	% Sucrose in Juice	No. of Rotten Canes per Plot
B.37161	40.81	21.3	16.9	6
B.4098	43.70	22.5	18.5	7
B.4502	34.86	22.6	19.3	7
B.4503	39.64	20.6	16.4	4
B.4504	34.96	21.0	16.9	14
B.4506	33.75	20.3	17.5	5
B.4556	31.80	22.0	19.2	20
B.4572	39.69	21.9	19.0	8
B.4596	47.48	18.9	16.6	3
B.45137	39.09	22.0	18.7	6
B.45151	43.94	22.1	20.1	9
B.45152	49.39	22.5	19.7	4
B.4604	32.60	19.8	17.5	21
B.4681	36.18	21.6	18.9	14
B.4691	45.49	20.1	17.4	9
B.46136	36.47	21.9	18.4	13
B.46223	45.91	21.0	17.3	6
B.46232	36.26	19.4	16.9	4
B.46284	38.80	21.7	18.7	7
B.46288	39.27	20.5	16.4	15
B.46364	34.02	20.9	18.2	4
B.46394	28.23	21.9	17.4	6
B.46397	53.09	21.8	18.1	7
S.45	43.78	21.8	17.1	12

A difference of ± 4.85 tons cane per acre may be considered significant.

In this trial, B.46397 and B.45152 were significantly better than the standard variety B.4098 on cane yield. B.4596, B.4691 and B.46223 proved to be significantly better than B.37161, while B.45151 and S.45 gave yields comparable with those given by the standards. B.45151 had an outstanding juice. Other varieties with very good juices were B.4098, B.4502, B.4556, B.4572, B.45137, B.45152, B.4681 and B.46284.

TABLE XXI

Soil Type:—Group IV (b) Third Year Seedling Trials—Plant Canes
Carrington—Cut 13th & 14th March, 1950

Variety	Tons Cane per Acre	Z.H.R. Brix	% Sucrose in Juice	No. of Rotten Canes per Plot
B.37161	39.12	21.0	18.0	8
B.4098	39.29	22.5	19.8	7
B.4502	29.52	22.0	18.9	8
B.4503	33.50	20.0	17.8	7
B.4504	28.20	21.4	18.1	8
B.4506	28.77	21.7	18.2	13
B.4556	29.82	22.2	20.1	12
B.4572	30.24	22.1	19.0	8

TABLE XXI—*Continued*

Variety	Tons Cane per Acre	Z.H.R. Brix	% Sucrose in Juice	No. of Rotten Canes per plot
B.4596	35.36	20.7	18.6	2
B.45137	34.28	22.3	18.6	2
B.45151	37.93	22.2	19.6	8
B.45152	39.12	21.9	20.1	6
B.4604	33.69	21.1	17.5	12
B.4681	29.54	22.5	19.0	11
B.4691	36.44	20.7	17.5	5
B.46136	29.90	21.4	18.3	8
B.46223	43.20	21.7	18.0	4
B.46232	28.80	20.7	18.3	1
B.46284	35.10	22.1	19.2	6
B.46288	26.82	20.5	17.4	32
B.46364	28.75	20.8	18.1	5
B.46394	28.02	22.6	18.8	6
B.46397	44.30	21.7	18.4	3
S.45	27.72	21.1	17.6	36

A difference between mean yields of ± 4.62 tons of cane per acre may be considered significant.

This trial was under water for a period of about six weeks after the August 31st rains, and at times the water was several feet deep. All short canes which had their growing points submerged for any length of time were killed, so that these results can only indicate the relative merits of the varieties under these very exceptional conditions.

B.46397 was the only variety which gave a significantly heavier yield of cane than the standards. Other varieties which gave comparable yields were B.45151, B.45152, B.4691 and B.46223. B.4556 and B.45152 gave juices with the highest sucrose content, while B.4098, B.4502, B.4572, B.45151, B.4681, B.46284 and B.46394 also had very good juices.

In this trial, the canes of S.45 were rotting badly at the time of cutting. This cane appears to be susceptible to red rot, as the rot appeared to start in internodes damaged by the moth borers, and spread in both directions.

TABLE XXII

Soil Type:—Group IV (b) Select Seedling Trials—Plant Canes
Bulkeley—Cut 20th April, 1950

Variety	Tons Cane per Acre	Tons Sucrose per Acre	% Sucrose in Juice	Quotient of Purity	No. of Rotten Canes per Plot
B.37161	39.32	6.39	16.2	92.0	10
B.4098	43.28	7.09	16.4	88.5	10
B.41211	45.90	7.27	15.8	87.4	14
B.41227	40.91	6.99	17.1	89.4	8
B.44341	40.84	6.92	16.9	89.6	9

Differences between the mean yields of cane and sugar are insignificant.

In this trial, B.41211 gave the heaviest yield of cane and sugar, and B.37161 the lowest. However, the differences between the mean yields cannot be shown to differ statistically. B.41227 yielded the best quality juice, and B.41211 the poorest. The purities of all the varieties were satisfactory, but B.37161 was, as usual, outstanding in this respect.

SUMMARY

Third Year Seedling Trials—Plant Canes

In these trials, seedlings of the first half of the B.45' Series, and seedlings of the B.46' Series were compared with the standard commercial varieties, B.37161 and B.4098. B.46397 was included in five trials, and gave the heaviest yield of cane in each case. It is a thick clean yellow cane with a white ring of wax below the nodes. B.46223 also performed very well, and this variety closely resembles B.46397, while they both resemble B.41211. The Cytogeneticist has examined the three varieties closely, and can find no apparent difference between them. The three varieties are to be planted together in Select Seedling Trials, and the Cytogeneticist will examine them cytologically to see if they are, in fact, one variety. B.45151 and B. 45152 also performed well. They are both derived from the cross B. 39254 x B.34104, so that they carry the 'bloods' of *S. officinarum* (noble), *S. barberi* (Chunnee), *S. spontaneum* (Local) and *S. sinense* (Uba). B.45151 is a thin, upright, yellow-brown cane which drops its trash fairly well, but there are so many canes that cleaning is difficult. It has an excellent juice, and arrows very sparingly. The canes of B.45152 are medium to thin, pale-green with a heavy bloom of white wax which is often discoloured by mildew. The canes are long and sprawling and, even in the trials which were cut latest in crop, the leaves were still green for about half the length of the cane. This makes them extremely difficult to clean. The variety has an excellent juice.

B.4572, derived from the cross B.3439 x B. (30) L. 7 is a thick, clean, yellow cane with an excellent juice. It has given some fairly good yields of cane but, generally speaking, it arrows too heavily in Barbados to be useful commercially.

B.4596, derived from the cross B.35206 x B. 34104, has given some excellent yields of plant cane, but the juice quality is too poor for this variety to be considered for commercial purposes in Barbados.

B.4681 has also given some fairly good yields of cane and has an excellent juice. It appears to favour the high rainfall districts.

The variety, B.4691, was expected to do well in these trials, but proved to be very disappointing. It outyielded the standards at Bushy Park but was badly beaten at Kendal, and was no better than the standards at the other stations.

B.46364 is an erect, dark-purple cane with white wax rings below the nodes and yellow root bands. It drops its trash very nicely, but the canes appear to be light. It has a good juice and, so far, has not arrowed even in the high rainfall areas.

B.46102 was included in one trial only, and gave a very good yield of plant cane. The canes are long and thick and tend to run along the ground. The juice quality is fair only.

S.45, which was obtained from a seedling found growing in a field by the Manager of Bowmanston Plantation, is probably derived from the cross B.37161

x B.4098. The canes are very long and thick, and the variety is capable of giving heavy plant cane yields, but it appears to be susceptible to red rot, which probably accounts for the very poor juice which has been reported by the factories.

Third year Seedling Trials—First Ratoons

In these trials, seedlings of the second half of the B.45' Series and outstanding seedlings of earlier series were compared with the standard varieties, B.37161 and B.4098. Of the B.45' series of seedlings only B.45267 was better than the standards, and this variety tends to hold its trash so firmly that, in spite of a good juice, it cannot be considered for commercial planting in Barbados. Of the other varieties tried, B.41211 and B.41227 were outstanding in all ratoon trials. Both of these varieties are now being grown commercially to some extent. B.43337 and B.433391 have both given heavy yields of cane, but the juice of these varieties is fair only. B.43337 arrows too heavily to be grown commercially in Barbados, but B.43391 may be grown to some extent, particularly in the high rainfll areas, as it arrows very sparingly. This variety matures late in the crop season.

B.4362 has also put in some good performances. It gives fairly heavy yields of cane, but its chief advantage is its excellent juice. It is being recommended as a variety for early reaping, where sugar and not cane yield is of prime importance. This variety is also highly resistant to mosaic disease.

Third year Seedling Trials—Second Ratoons

Only one of these trials was reaped, and here the seedlings of the B.44' Series were being compared with the standard varieties, B.37161 and B.4098. B.4466 and B.44341 were the outstanding seedlings in this series, while B.44278, B.44182, B.44101 and B.44111 also gave good yields of second ratoon cane, B.4466 has given consistently good yields in this trial, but judging from the general observations during the growth of the crop, and the appearance of the canes at harvest, the variety would appear to favour a longer active growing season than normally obtains in Barbados. B.44341 showed promise as a plant cane, but gave very disappointing first ratoon yields. However, it gave a very good yield of .second ratoon cane in this trial and has an excellent juice when ripe. The other varieties mentioned appear to be no better than the standard varieties and, when the newer varieties B.41211 and B.41227 are taken into consideration, it is highly improbable that any of the B.44' series will be of commercial importance in Barbados.

Select Seedling Trials

In these trials the variety B.41211 has been outstanding, giving very heavy yields of cane and sugar. This variety matures early in the crop season, but not necessarily at the beginning of crop. The canes must be cut when mature, or the juice is liable to be very poor. If the plant cane crop is allowed to stand too long the canes will start to rot. The ratoon crops appear to ripen later and stand longer without rotting than the plant cane crops. B.41227 would be outstanding in Barbados if the variety did not flower so profusely. Most varieties tend to produce a number of side shoots on the stalks which have flowered, but such is not the case with B.41227, with the result that stalks which have flowered tend to dry out. The variety usually matures about mid crop, and has an excellent juice when mature.

The variety B.43391 has been included in some of the select seedling trials but, generally speaking, it has proved to be no better than the standard varieties, B.37161 and B.4098. It matures late in the crop season, and has a fairly

good juice when ripe. It may be useful in some parts of the high rainfall districts where arrowing is profuse, and on thin fields where a heavy fall of trash is desired.

B.44341 has been very disappointing in the plant cane trials. The yields have been poor on the whole and even in those cases in which the yields have come up to those of the standard varieties, then the juice has usually been poor. Taking everything into consideration, it is unlikely that this variety will find a place in the commercial cultivation of Barbados.

III. DESPATCH OF SEEDLINGS TO CONTRIBUTING COLONIES

Cuttings of varieties of the B.47' Series were sent to the various contributing colonies in October, 1949. The varieties and the colonies to which they were sent are listed below:—

British Guiana and Trinidad	B.s.4710, B.s.4711, B.s.4724, B.s.4733, B.s.4738, B.s.4743, B.s.4744, B.s.4746, B.s.4747, B.4755, B.4764, B.4765, B.4781, B.4788, B.47135, B.47147, B.47151, B.47162, B.47179, B.47204, B.47214, B.47216, B.47217, B.47225, B.47233, B.47256, B.47258, B.47262, B.47298, B.47306, B.47314, B.47348, B.47379, B.47380, B.47397, B.47399 and B.47419.
Jamaica	B.s.4710, B.s.4711, B.s.4726, B.s.4733, B.s.4738, B.s.4743, B.s.4744, B.s.4746, B.s.4747, B.4764, B.4765, B.4789, B.47112, B.47147, B.47151, B.47204, B.47225, B.47233, B.47256, B.47258, B.47294, B.47298, B.47306, B.47310, B.47312, B.47314, B.47320, B.47348, B.47361, B.47364, B.47386, B.47397, B.47399, B.47410 and B.47419.
Antigua & St. Kitts ..	B.s.4738, B.s.4744, B.s.4746, B.s.4747, B.4781, B.4788, B.47135, B.47147, B.47151, B.47179, B.47214, B.47216, B.47217, B.47258, B.47314, B.47379, B.47380, B.47397, B.47419.
St. Lucia	B.43229.

In addition to the above, the following varieties were sent to foreign countries:—

Venezuela	B.4362, B.43127, B.43229, B.43337, B.44165 and B.42231.
United States ..	B.39246, B.39250, B.48123, B.48124, B.44130, B.44131, B.4459, B.46199, B.35269, B.47200, and B.42231.
Dominican Republic	B.4362 and B.43391.
Mexico	B.3439, B.34104, B.37161 and B.37172.
Australia	B.37161, B.4098, B 41211 and B.41227

IV. PERFORMANCE OF VARIETIES IN CONTRIBUTING COLONIES

Barbados

B.37161 continued to dominate the cane acreage, although the percentage under this variety is now decreasing. It represents 84.76% of the acreage to be harvested in 1951, compared with 90.80% for 1950. Replacement of the B.37161 acreage is accounted for largely by increased plantings of B.41211, B.4098 and B.41227.

B.41211 has given heavy tonnages of cane, both in trials and in commercial plantings, and were it not for certain misgivings on its juice quality, there is no doubt that it would be far more popular on the estates. Experience with B.41211 has shown that although its juice quality is generally poor at first, it matures rapidly, and is ripe early in the crop season. Ripening is usually accompanied by a yellowing of the leaves. When ripe, the juice quality is quite good, but on standing after maturity, deterioration is rather rapid, and there may be considerable cane rotting if reaping is delayed too long. Ratoons usually ripen later than plant canes, and stand longer without deterioration.

B.4098 is best suited to low and intermediate elevations with moderate to good rainfall. Under dry conditions it is outyielded by B.37161 and B.41211, while it tends to arrow too heavily in the more elevated areas.

B.41227 is at its best in the intermediate and high rainfall areas, but will arrow heavily if conditions are favourable. It is unsuited to the low rainfall areas. The juice quality is excellent from mid-crop onwards.

The variety percent. acreage figures for the 1951 crop are as follows:

Variety	Percent. of acreage to be reaped
B.37161	84.76
B.41211	6.58
B.4098	5.82
B.41227	0.76
B.43391	0.73
B.35187	0.24
S.45	0.20
B.34104	0.15
Mixed and others	0.76
	100.00

Jamaica.

B.34104 remains the major estate variety, in spite of heavy infection by mosaic disease, to which it is remarkably tolerant. Attempts to assess the amount of yield reduction due to mosaic infection were vitiated by the rapid rate of infection of clean plantings used as control material, so it is not possible to state whether the disease is causing appreciable losses. Fortunately, however, several newer varieties are available which are immune or highly resistant to mosaic disease, and which have proved themselves to be capable of outyielding B.34104 both in trials and in commercial cultivation. B.41227, an immune variety, is suited to all districts except the wet East coast area, and is likely to outyield B.34104 wherever the latter is grown.

B.42231 has given promising results, though it is inclined to arrow heavily, and is characterised by particularly good juice quality. B.4362, another mosaic-immune variety, yields well throughout the island, and also has excellent juice quality. It has outyielded B.37172 in trials in the wet East coast district, and is likely to be widely planted there.

B.3439 is still grown on a considerable scale, particularly on the North coast estates and under irrigation in the dry areas.

B.37172 has proved particularly well adapted to the wet East coast area, where it is planted almost exclusively. It gives high tonnages of cane with a good juice quality in spite of poor ripening conditions.

B.37161, though still occupying only a small total area, is being increasingly planted. It is mosaic-susceptible, though tolerant.

Further details of the variety situation in Jamaica are available in the Station's Bulletin No. 32, published in June, 1950.

For the 1950 crop, the following percentage acreages were reaped:—

B.34104	54%
B.3439	22%
B.37172	6%
B.37161	4%
Mixed and others	14%
	100%

Trinidad

B.34104 was the major commercial variety in 1950, representing 36.5% of the harvested area. It is, however, being rapidly superseded, and only accounted for about fifteen percent. of the new plantings made during the year. It has been consistently outyielded by B.37161, particularly on the undulating areas to the south, and is being replaced there.

B.3337 is being planted to an increasing extent, particularly in the Caroni and Brechin Castle areas where it is favoured on account of its resistance to froghopper damage. It is likely, however, that with the recent success of control methods against froghopper by means of insecticides, B.3337 will give way to the newer varieties—particularly those which are more reliable in juice quality.

B.37172 and B.4098 have outyielded B.3337 in trials, and are being planted on an increasing scale commercially.

B.41227 and B.4362 are still comparatively unknown commercially in Trinidad, but both have given very good results in trials and in small-scale commercial cultivation on certain estates, and are likely to be planted extensively.

Further details of the growing conditions and variety situation in Trinidad are to be found in the Station's Bulletin No. 31, published in June, 1950.

Percentage acreages reaped in the 1950 crop were as follows:—

B.34104	36.5%
B.3337	29.2%
B.37161	17.8%
B.37172	11.0%
B.4098	0.9%
Mixed and others	4.6%
	100.0%

British Guiana.

B.34104 continued to increase in popularity, and represents more than 67% of the acreage for the 1951 crop. Its increase has been largely at the expense of D. 14/34, which although giving fair yields of high quality cane is outyielded by B.34104 and is also inferior in early coverage for weed control. B.34104 has also replaced a great deal of the acreage previously occupied by Co.421 and Co.419, which have proved disappointing.

B.37161 and B.41227 are being extensively planted, the former finding favour particularly on the Demerara River banks, while the latter has given exceptionally promising results throughout the cane belt, and is likely to become a major commercial variety in the near future.

Short-season varieties are selected specially for British Guiana at the Barbados Station, and a number of these selections have been sent and are already under test in the colony.

Leaf Scald Disease of sugar cane (*Xanthomonas albilineans*) was recognised in British Guiana late in 1950, and was subsequently found to be of widespread occurrence throughout the cane belt, particularly on B.34104. The problem of its control is being actively investigated, and experiments to assess the resistance of the available varieties have been started. Until the results of these are known, it is impossible to state whether a re-orientation of the breeding policy at the Barbados Station for British Guiana conditions will be necessary.

Details of the variety situation in British Guiana, and of the Leaf Scald Disease problem, are given in the Station's Bulletin No. 34, published in February, 1951.

Variety percent. acreage figures for the 1950 and 1951 crops were as follows :—

Variety	**1950**	**1951**
B.34104	58.4%	67.4%
D.14/34	20.2%	15.0%
B.37161	1.4%	3.8%
B.41227	0.3%	3.6%
Co.421	8.5%	3.5%
Co.419	4.5%	2.7%
Diamond 10 ..	3.1%	0.9%
P.O.J.2878 ..	1.6%	0.4%
Others	2.0%	2.7%
	100.0%	100.0%

Antigua

B.4098 is the dominant variety in Antigua, having proved well suited to all the ecological areas of the island. It occupied 42.61% of the acreage for the 1950 crop, and has been extended since to such an extent that the figure for the 1951 crop is 67.13%. The increased plantings have been largely at the expense of B.37161, which has decreased much in popularity. The 1950 hurricane showed, however, that B.4098 is comparatively susceptible to damage by high winds — far more so than B.37161, which suffered considerably less damage, probably on account of its more flexible canes.

B.34104, which was the standard variety as recently as 1946, now occupies only a minor part of the cane acreage.

B.37172 has given good results on the Blubber Valley loams, and is recommended for planting there, while B.41227 has also performed well on the lighter Blubber Valley loams. B.3439 continued to give good yields on the York clay.

The variety percent. acreage figures for the 1950 and 1951 crops are shown below :—

Variety	1950	1951
B.4098	42.61	67.13
B.37161	38.75	19.34
B.37172	3.07	2.02
B.34104	7.15	3.59
B.3439	7.42	7.00
Others	1.00	0.92
	100.00	100.00

St. Kitts

In general, the variety situation in St. Kitts follows fairly closely that in Barbados. B.37161 occupied the cane area almost to the exclusion of other varieties, representing more than 94% of the acreage for the 1950 crop. Some alarm was felt on certain estates early in 1950 when it was noticed that a proportion of the ratoon stools was dying out in this variety. The Cytogeneticist, B.W.I. Central Sugar Cane Breeding Station, visited the island to investigate the condition, and reported that there was no epidemic attack of any pest or disease, but that the trouble could be attributed to physiological causes associated with the reaping of the previous crop under unfavourable environmental conditions during part of the crop season. Later reaped fields ratooned satisfactorily, and no recurrence of the condition has been reported.

B.41211 has given good results in all ecological zones, but more particularly at the lower altitudes.

B.41227 appears best suited to the high rainfall areas of medium elevation, and the moderate and high rainfall areas at higher altitudes.

B.34104 still gives satisfactory results at the highest elevations, and is planted by many estates under such conditions.

B.4362 has given good results in the lower and middle lands, and is characterised, as in other colonies, by consistently high juice quality.

The per cent. variety acreage figures for the 1950 crop are as follows:—

B.37161	94.29%
B.34104	1.38%
B.3439	0.54%
Others and mixed	3.79%
	100.00%

V. MOSAIC DISEASE TRIALS

Seedlings of the B.47′ Series were inoculated artificially making use of the Sein Method and B.34104 infective material. At the same time, forty plants of Ba.11569 and fifty plants of B.H.10(12) were also inoculated to serve as checks.

Up to the time of writing only four plants were showing the symptoms. These were Ba.11569 (1 plant), B.H.10 (12) (1 plant), B.4764 (1 plant) and B.47147 (1 plant). This, it must be admitted, is not a particularly encouraging result, especially when it is remembered that when this work was started, little difficulty was experienced in obtaining one hundred per cent. infection with Ba.11569, and that in fourteen days after inoculation.

The needles used in this inoculation were fine sewing needles, and were further reduced in size on a hone, as it was thought that the needle size being used may be the cause of the trouble. It is obvious that this is not the sole cause, although it may be contributory. It would appear that the Barbados strain of mosaic disease or, at least, the material we are using at present, is losing its virulence.

Mosaic in Barbados generally has more or less disappeared with the switch over to B.37161 which, although it is susceptible to the disease, does not appear to have been affected to any extent. In fact, the writer has not seen half-a-dozen cases of mosaic on B.37161, and no cases are being reported by the plantations.

It is proposed to institute a thorough search for mosaic during the early part of the coming wet season and, if any is found, to inoculate this on to Ba.11569 and compare it with the B.34104 material which is at present in the mosaic plots. Should any new material collected prove to be no more virulent than the present one, then the best course would appear to be to stop this work altogether.

VI. STATEMENT OF EXPENDITURE FOR 1949—50

1.	Personal Emoluments	$11,486.10
2.	Provident Fund	763.20
3.	Seedling Trials	15,274.03
4.	Stationery and Library	458.92
5.	Travelling	1,907.07
6.	Incidentals	599.70
7.	Capital	132.00
	Total	$30,621.02

APPENDIX I.

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1949—1950, B.s.51' AND B.52' SERIES

Details of crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery, and in the B.s.51' Series First Year Seedling Trial

Cross	Group	No. Germinated	No. Potted	No. Planted in Nursery	No. Planted in First Year Trial
	S. officinarum x S. spontaneum				
B.4196 x B.37256 ...	2nd Nobilisation Local ...	6	6	5	—
B.41277 x B.41242 ...	3rd Nobilisation Glagah ...	—	—	—	—
B.4145 x B.39250 ...	Noble x Glagah x Dacca ...	—	—	—	—
Co.421 x B.41211 ...	Noble x Glagah x Local ...	7,500	2,120	1,849	200
Co.421 x B.39156 ...	Noble x Glagah x Celebes ...	3,500	850	797	—
B.34102 x B.43391 ...	Noble x Glagah x Celebes ...	360	360	250	—
		11,366	3,336	2,901	200
	S. officinarum x S. spontaneum x S. barberi				
B.35207 x B.34104 ...	Noble x Chunnee x Local ...	740	332	149	—
B.3365 x B.34104 ...	„ x „ x „ ...	270	258	250	—
B.37161 x B.40102 ...	„ x „ x „ ...	90	78	78	—
B.37161 x B.4098 ...	„ x „ x „ ...	900	870	823	—
B.37161 x B.34104 ...	„ x „ x „ ...	550	550	470	—
B.45170 x B.34104 ...	„ x „ x „ ...	731	731	499	—
B.3439 x Co.290 ...	„ x „ x „ ...	1,000	1,000	760	200
B.39207 x B.41211 ...	„ x „ x „ ...	500	400	388	—
B.41227 x Self ...	Noble x Glagah x Chunnee	177	177	23	—
Co.421 x B.41227 ...	„ x „ x „ ...	4,200	1,500	1,208	200
Ba.11569 x B.45111	„ x „ x „	28	28	24	—
B.42304 x B.41227 ...	„ x „ x „	680	650	419	200
B.4111 x B.41227 ...	„ x „ x „	76	76	66	—
B.37161 x B.41227 ...	„ x „ x „	169	169	150	—
B.4145 x B.41227 ...	„ x „ x „	330	330	304	—
B.37161 x B.37164 ...	„ x „ x „	80	80	75	—
B.37172 x B.41227 ...	„ x „ x „	48	48	47	—
B.37161 x B.41242 ...	„ x „ x „	350	260	200	—
B.37172 x B.44177 ...	„ x „ x „	22	22	20	—
B.4362 x B.41227 ...	„ x „ x „	40	40	37	—
B.3439 x B.41227 ...	„ x „ x „	94	94	80	—
B.34102 x B.4098 ...	Noble x Local x Glagah x Chunnee	800	800	400	200
B.44182 x B.4098 ...	„ x „ x „	62	62	52	—
B.4362 x B.4098 ...	„ x „ x „	124	124	117	—
P.O.J.2364 x B.34104	„ x „ x „	700	700	617	—
Co.421 x B.34104 ...	„ x „ x „	850	700	457	200
B.38203 x B.34104 ...	„ x „ x „	184	184	150	—
B.38233 x B.34104 ...	„ x „ x „	221	221	213	—
B.4094 x P.O.J.2878	„ x „ x „	7	7	7	—
B.37161 x Co.419 ...	„ x „ x „	380	380	300	—
B.37161 x B.43214 ...	„ x „ x „	1,600	1,000	935	—
B.4145 x Co.281 ...	„ x „ x „	14	14	9	—
B.4145 x B.38192 ...	„ x „ x „	212	212	—	—
B.4145 x B.4098 ...	„ x „ x „	1,600	1,600	1,202	300
B.4145 x B.40102 ...	„ x „ x „	9	9	7	—

APPENDIX I.—*Continued*

Cross	Group	No. Germinated	No. Potted	No. Planted in Nursery	No. Planted in First Year Trial
B.4145 x B.40105 ...	Noble x Local x Glagah x Chunnee	15	15	13	—
B.48361 x B.4098 ...	,, x ,, x ,,	200	200	150	—
B.4214 x B.41227 ...	,, x ,, x ,,	33	33	29	—
B.37161 x B.42231 ...	,, x ,, x ,,	210	210	170	—
B.4558 x B.4098	,, x ,, x ,,	560	560	540	—
B.37161 x B.42114 ...	,, x ,, x ,,	250	250	200	—
B.37172 x B.4098 ...	,, x ,, x ,,	800	800	535	200
B.37172 x B.4226 ...	,, x ,, x ,,	282	282	250	—
B.46190 x B.4098 ...	,, x ,, x ,,	600	600	400	—
B.4373 x B.4098 ...	,, x ,, x ,,	300	300	286	—
B.38233 x B.4098 ...	,, x ,, x ,,	500	330	266	—
B.37172 x Co.281 ...	,, x ,, x ,,	32	32	30	—
B.37172 x B.40102 ...	,, x ,, x ,,	—	—	—	—
Co.421 x B.4098 ...	,, x ,, x ,,	460	460	337	100
B.38272 x B.4098 ...	,, x ,, x ,,	650	650	488	—
B.4145 x B.40118 ...	,, x ,, x ,,	106	106	70	—
B.3439 x Co.419 ...	,, x ,, x ,,	350	350	291	—
B.35197 x B.41227 ...	Noble x Celebes x Glagah x Chunnee	600	600	398	—
B.35247 x B.41227 ...	,, x ,, x ,,	5,500	250	150	—
B.35207 x B.48394 ...	,, x ,, x ,,	92	92	79	—
B.35197 x B.46136 ...	,, x ,, x ,,	544	544	505	—
B.37161 x B.43391 ...	,, x ,, x ,,	150	150	116	—
B.35197 x B.34104 ...	Noble x Celebes x Local x Chunnee	850	600	309	—
B.35247 x B.34104 ...	,, x ,, x ,,	4,800	500	100	—
B.43349 x B.34104 ...	Noble x Glagah x Celebes x Local x Chunnee ...	280	280	200	—
B.44167 x B.34104 ...	Noble x Glagah x Celebes x Local x Chunnee ...	460	360	351	—
B.42304 x B.46265 ...	Noble x Glagah x Celebes x Local x Chunnee ...	1,000	250	150	—
B.4145 x B.43290 ...	Noble x Glagah x Celebes x Local x Chunnee ...	15	15	7	—
B.35197 x B.42231 ...	Noble x Glagah x Celebes x Local x Chunnee ...	600	342	310	—
B.43358 x B.43127 ...	Noble x Glagah x Celebes x Local x Chunnee ...	500	200	149	—
B.45137 x B.39156 ...	Noble x Glagah x Celebes x Local x Chunnee ...	44	44	42	—
B.43283 x B.41227 ...	Noble x Glagah x Celebes x Local x Chunnee ...	6,000	1,500	909	200
		44,621	24,611	18,366	1,800
	S. officinarum x S. spontaneum x S. sinense				
Ba11569 x B.35276	Noble x Glagah x Sinense ...	17	17	17	—
	S. officinarum x S. spontaneum x S. barberi x S. sinense				
B.4145 x B.45266 ...	Noble x Glagah x Local x Chunnee x Sinense	—	—	—	—
B.40272 x B.46248 ...	Noble x Glagah x Local x Chunnee x Sinense ...	10	10	8	—
B.45154 x B.4098 ...	Noble x Glagah x Local x Chunnee x Sinense ...	1,000	1,000	672	—

APPENDIX I.—*Concluded*

Cross	Group	No. Germinated	No. Potted	No. Planted in Nursery	No. Planted in First Year Trial
B.45155 x B.4098 ...	Noble x Glagah x Local x Chunnee x Sinense ...	158	158	150	—
B.40272 x Co.290 ...	Noble x Glagah x Local x Chunnee x Sinense ...	700	700	540	—
B.46288 x B.37261 ...	Noble x Glagah x Local x Chunnee x Sinense ...	10	10	8	—
B.37226 x B.4098 ...	Noble x Glagah x Local x Chunnee x Sinense ...	—	—	—	—
B.45119 x B.4098 ...	Noble x Local x Chunnee x Sinense	400	250	150	—
		2,278	2,128	1,528	—
	S. officinarum x S. spontaneum x S. robustum				
B.4145 x B.48122 ...	Noble x Glagah x Robustum	40	40	39	—
B.4145 x B.48121 ...	„ x „ x „	7	7	6	—
		47	47	45	—
	S. officinarum x S. spontaneum x S. barberi x S. robustum				
B.48118 x B.4098 ...	Noble x Local x Chunnee x Robustum	950	200	100	—
B.45198 x B.4098 ...	Noble x Local x Chunnee x Robustum	550	340	100	—
B.4699 x B.4454 ...	Noble x Local x Chunnee x Robustum	38	38	38	—
		1,538	578	238	—
	S. officinarum x S. spontaneum x S. barberi x S. sinense x S. robustum				
B.48306 x B.4098 ...	Noble x Glagah x Local x Chunnee x Sinense x Robustum	400	329	200	—
	S. officinarum x S. spontaneum x Erianthus arundinaceous				
B.4145 x 28N.G.7 ...	Noble x Glagah x Erianthus	—	—	—	—
	Grand Totals ...	60,267	31,046	23,295	2,000

APPENDIX II.

SUGAR CANE FIRST YEAR SEEDLINGS — B.51' SERIES

List of Crosses and the Number of Seedlings of each Planted in the Field Nursery (May 1949) and in the First Year Seedling Trial (October 1949)

Cross	Group	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
	S. officinarum x S. spontaneum		
B.41104 x B.39246	2nd Nobilisation Dacca	160	50
B.44132 x Ba.6032	2nd Nobilisation Glagah	32	15
B.3439 x B.3337 ...	4th Nobilisation Glagah	137	60
		329	125
	S. officinarum x S. barberi		
B.3365 x B.603 ...	3rd Nobilisation Chunnee	175	75
	S. officinarum x S. robustum		
B.4457 x B.603 ...	3rd Nobilisation Robustum	184	60
B.4587 x B.603 ...	3rd Nobilisation Robustum	173	50
		357	110
	S. officinarum x S. sinense		
B.3439 x B.35269	2nd Nobilisation Sinense	38	15
	S. officinarum x S. barberi x S. spontaneum		
B.3365 x B.34104	Noble x Chunnee x Local	455	160
B.3439 x B.45105	,, x ,, x ,, ...	6	4
B.3439 x Co.290 ...	,, x ,, x ,, ...	662	230
B.35206 x B.3410 4	,, x ,, x ,, ...	162	60
B.35207 x B.34104	,, x ,, x ,, ...	300	140
B.35207 x B.4098 ...	,, x ,, x ,, ...	200	100
B.37161 x B.34104	,, x ,, x ,, ...	559	160
B.37161 x B.4098 ...	,, x ,, x ,, ...	150	80
B.37161 x Co.290 ...	,, x ,, x ,, ...	416	150
B.39240 x B.34104	,, x ,, x ,, ...	50	24
B.4092 x B.37193	,, x ,, x ,, ...	49	13
B.4094 x B.37193	,, x ,, x ,, ...	150	40
B.3365 x B.37164	Noble x Chunnee x Glagah	583	100
B.3365 x B.41203	,, x ,, x ,, ...	66	33
B.3439 x B.37175	,, x ,, x ,, ...	217	60
B.35206 x P.O.J.2878	,, x ,, x ,, ...	399	120
B.35207 x P.O.J.2878	,, x ,, x ,, ...	927	326
B.37161 x B.3337 ...	,, x ,, x ,, ...	350	90
B.37161 x P.O.J.2878	,, x ,, x ,, ...	120	55
B.37172 x B.37193	,, x ,, x ,, ...	269	25
B.38203 x B.603 ...	,, x ,, x ,, ...	69	40
B.38233 x B.603 ...	,, x ,, x ,, ...	114	60
B.4145 x B.37193	,, x ,, x ,, ...	448	135
B.42304 x B.37193	,, x ,, x ,, ...	268	100
B.4362 x B.40175	,, x ,, x ,, ...	144	59
Co.421 x B.37193	,, x ,, x ,, ...	270	80
Co.421 x B.41227	,, x ,, x ,, ...	567	157

APPENDIX II.—*Continued*

Cross	Group	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
B.35247 x B.40175	Noble x Celebes x Chunnee	233	20
B.37161 x B.39274	,, x ,, x ,, ...	188	80
B.3439 x B.38192	Noble x Local x Glagah x Chunnee ...	900	310
B.3439 x B.42231	,, x ,, x ,, x	430	100
B.3439 x Co.419 ...	,, x ,, x ,, x ,, ...	163	80
B.34102 x B.34104	,, x ,, x ,, x ,, ...	558	160
B.37161 x Co.419 ...	,, x ,, x ,, x ,, ...	215	100
B.37172 x B.34104	,, x ,, x ,, x ,, ...	374	120
B.37172x B.4098 ...	,, x ,, x ,, x ,, ...	132	80
B.37172 x Co.290 ...	,, x ,, x ,, x ,, ...	440	140
B.38203 x B.34104	,, x ,, x ,, x ,, ...	377	150
B.38203 x B.41211	,, x ,, x ,, x ,, ...	184	80
B.38233 x B.34104	,, x ,, x ,, x ,, ...	256	120
B.38233 x B.41211	,, x ,, x ,, x ,, ...	384	174
B.4096 x B.35187	,, x ,, x ,, x ,, ...	12	8
B.4111 x B.34104	,, x ,, x ,, x ,, ...	328	100
B.4111 x B.4098 ...	,, x ,, x ,, x ,, ...	384	155
B.4145 x B.34104	,, x ,, x ,, x ,, ...	277	120
B.4145 x B.4098	,, x ,, x ,, x ,, ...	1,022	455
B.4145 x B.4226 ...	,, x ,, x ,, x ,, ...	197	50
B.4145 x B.42114	,, x ,, x ,, x ,, ...	234	100
B.4145 x B.42231	,, x ,, x ,, x ,, ...	416	173
B.4145 x Co.419 ...	,, x ,, x ,, x ,, ...	94	50
B.42304 x B.4098 ...	,, x ,, x ,, x ,, ...	377	150
B.4362 x B.34104	,, x ,, x ,, x ,, ...	338	100
B.4362 x B.41211	,, x ,, x ,, x ,, ...	175	80
B.45170 x B.41227	,, x ,, x ,, x ,, ...	310	80
Co.421 x B.34104	,, x ,, x ,, x ,, ...	531	225
Co.421 x B.4098 ...	,, x ,, x ,, x ,, ...	220	140
B.35197 x B.34104	Noble x Local x Celebes x Chunnee ...	385	160
B.35247 x B.34104	,, x ,, x ,, x ,, ...	488	120
B.39157 x Co.290 ...	,, x ,, x ,, x ,, ...	11	6
B.35197 x B.42231	Noble x Local x Glagah x Celebes x Chunnee	297	100
B.44261 x B.39156	,, x ,, x ,, x ,,	260	130
B.35197 x B.41227	Noble x Glagah x Celebes x Chunnee ...	329	135
B.35247 x B.41227	,, x ,, x ,, x ,, ...	577	220
B.4362 x B.39274	,, x ,, x ,, x ,, ...	337	90
B.4362 x B.43391	,, x ,, x ,, x ,, ...	32	20
		20,435	7,282
	S. officinarum x S. spontaneum		
B.3439 x B.40255	Noble x Local x Glagah	278	80
B.37172 x B.41211	,, x ,, x ,, ...	476	100
B.4145 x B.41211	,, x ,, x ,, ...	537	225
Co.421 x B.41211	,, x ,, x ,, ...	840	400
B.34102 x B.3337 ...	Noble x Glagah	165	80
B.35197 x B.3337 ...	Noble x Glagah x Celebes	200	60
B.35247 x B.3337 ...	,, x ,, x ,, ...	580	120
B.37172 x B.43337	,, x ,, x ,, ...	116	60
		3,192	1,125
	S. officinarum x S. barberi x S. spontaneum x S. sinense		
B.39254 x B.37175	Noble x Glagah x Chunnee x Sinense ...	14	10

APPENDIX II.—*Concluded*

Cross	Group	No. Planted in Field Nursery	No. Planted in First Year Seedling Trial
B.40272 x B.37193	Noble x Glagah x Chunnee x Sinense ...	750	80
B.37172 x B.45266	Noble x Chunnee x Glagah x Local x Sinense	78	29
B.40272 x Co.290 ...	„ x „ x „ x „ x „	282	80
B.44341 x B.3337 ...	„ x „ x „ x „ x „	197	80
B.45220 x B.4098 ...	„ x „ x „ x „ x „	107	40
C.H.64/21 x B.4098	Noble x Chunnee x Local x Sinense ...	278	20
		1,706	339
	S. officinarum x S. spontaneum x S. sinense		
B.3439 x B.37261	Noble x Glagah x Sinense	73	30
B.4145 x B.35269	„ x „ x „	10	5
B.40272 x B.41211	Noble x Glagah x Local x Sinense ...	183	60
		266	95
	S. officinarum x S. spontaneum x S. robustum		
B.37172 x B.4454 ...	Noble x Glagah x Robustum	204	25
	S. officinarum x S. barberi x S. robustum		
B.37161 x B.4454 ...	Noble x Chunnee x Robustum	17	10
	S. officinarum x S. barberi x S. spontaneum x S. robustum		
B.4586 x B.4098 ...	Noble x Chunnee x Local x Robustum ...	160	50
	Grand Totals	26,879	9,251

APPENDIX III.

BRITISH WEST INDIES CENTRAL SUGAR CANE BREEDING STATION

ADVISORY COMMITTEE

SEVENTEENTH MEETING — JAMAICA

October 22nd, 25th and 26th, 1950

The following members of the Committee attended :—

Barbados	Mr. C. C. Skeete, O.B.E., Director of Agriculture, Chairman.
Imperial College of Tropical Agriculture	Mr. H. J. Page, O.B.E., Principal.
British Guiana	Mr. H. H. Croucher, Director of Agriculture.
Jamaica	Mr. A. C. Barnes, C.M.G., Director of Research, Sugar Manufacturers' Association (of Jamaica) Limited.
Leeward Islands	Mr. R. B. Allnutt, Director of Agriculture.
Trinidad	Mr. E. W. Leach, Director of Agriculture.
Windward Islands	Mr. S. A. Schouten, M.B.E., Agricultural Superintendent, St. Lucia

Sir John Saint, Kt., C.M.G., O.B.E.

The following persons also attended sessions of the meetings and took part in the discussions:

The Hon R. L. M. Kirkwood	Director, B.W.I. Sugar Association.
Mr. R. F. Innes	Senior Agronomist, Sugar Research Department, Sugar Manufacturers' Association (of Jamaica) Limited.
Mr. T. Chinloy	Statistician, Sugar Research Department, Sugar Manufacturers' Association (of Jamaica) Ltd.
Mr. D. M. Hanschell	Sugar Agronomist, Trinidad
Mr. B. deL. Inniss	Botanist, B.W.I. Central Sugar Cane Breeding Station
Mr. G. C. Stevenson	Cytogeneticist, B.W.I. Central Sugar Cane Breeding Station

PROCEEDINGS OF THE COMMITTEE

The proceedings of the Advisory Committee were as follows :—

ORGANISATION AND POLICY OF THE STATION

265. The memorandum attached as an appendix to these minutes, outlining the organisation and policy of the Station, was approved by the Committee.

PROGRESS REPORT ON THE WORK OF THE STATION AND BREEDING PROGRAMME

266. The Botanist submitted a progress report on the work of the Station for the period 1st October, 1949, to the 30th September, 1950, together with the proposed breeding programm for 1950.

267. The Committee expressed satisfaction that good progress was being maintained.

268. The Committee decided that the prefix B.s., which is at present used to distinguish those seedlings which have in the first place been selected after a twelve month growing period should be discontinued. The Committee decided that the suffix(s) should only be used to identify varieties which have proved to be suitable primarily for short season cropping.

PERFORMANCE OF SEEDLINGS IN MEMBER COLONIES

269. The Botanist submitted a report on the performance of varieties grown in Barbados and the Cytogeneticist reported on the performances of varieties in the other member Colonies.

THE CYTOGENETICIST'S REPORT FOR THE YEAR 1949—50 AND PROGRAMME OF VISTIS FOR 1950—51

270. The Cytogeneticist presented a report on his work for the year, and a programme of visits for the ensuing year. He reported the Cytogenetics Laboratory had been completed and fully equipped, and that a shipment of apparatus and reagents had recently been received. Seedling populations from selfings and sib-crosses had been obtained during the 1949 breeding season, and planted in the nursery for observation and selection in the project to develop pure lines for use in future breeding work. Illustrations of commercial sugar cane varieties of the British West Indies had been prepared for use in identification.

271. Visits had been made during the year to Antigua, St. Kitts, Jamaica and Trinidad. Reports on these visits had been published and issued as Bulletins of the Station. The programme of visits for the coming year included the U.S.A., Guadeloupe, British Guiana, St. Lucia and Grenada.

272. The Committee expressed satisfaction with the work done during the year, and approved the programme of visits. In view of the cytogenetical research work to be carried out in Barbados, the Committee emphasised the necessity of limiting future visits primarily to those in which specific variety questions needed investigation.

773. The Committee recommended that the sum of £200 should be allocated from the funds of the Station towards the cost of publishing the variety illustrations with descriptive text. It was agreed that in the first instance a complete illustration of one variety should be prepared and circulated. An estimate should then be made of the cost of the complete initial publication and guaranteed subscriptions invited. The publication should be supplemented from time to time as new varieties come into commercial use.

SUPPLY OF FUZZ FOR JAMAICA

274. The Chairman reported that on the request of the Director of Research of the Sugar Research Department of the Sugar Manufacturers' Association (of Jamaica) Limited, he had decided to send fuzz to Jamaica every year from crosses of sugar cane parent varieties considered likely to produce progeny resistant to mosaic disease in Jamaica. He observed that this decision would involve the Station in additional work, but expressed the hope that the new arrangements would expedite the solution of the mosaic disease problem in Jamaica.

275. The Committee approved of this arrangement on the assurance of the Jamaica representative that any of the varieties so produced would be made available to the Station.

276. Mr. Croucher observed that the question of the desirability of sending fuzz to British Guiana with the object of expediting the production of varieties suitable for the peculiar conditions of that Colony, might also arise.

277. The Committee was of the opinion that the use of fuzz at this stage might be premature since it had not yet been possible for British Guiana to test all the varieties which had been received form the Station. The Committee agreed that in the event of a request for fuzz being made, the matter would receive further consideration.

THE INTRODUCTION OF SUGAR CANE VARIETIES INTO THE CARIBBEAN AREA

278. The Chairman reported that it had come to his notice that sugar cane planting material had been recently introduced into the Caribbean area apparently without adequate quarantined Having regard to the potential danger associated with such introductions, the Committee recommended that the B.W.I. Central Plant Quarantine Committee should be asked to offer quarantine facilities to other sugar growing territories in the Caribbean.

279. Mr. Leach, in his capacity as Chairman of the B.W.I. Central Plant Quarantine Committee, stated that it was expected that the new plant quarantine station in Trinidad would bo in operation within six months. He further requested and the Committee approved that the Cytogeneticist, during his forthcoming visit to Washington, should ascertain and report upon the system of plant quarantine used for sugar cane at the U.S. Plant Quarantine Station at Beltsville.

ILLUMINATION EXPERIMENT FOR THE CONTROL OF ARROWING

280. The Botanist gave a brief description of the work in progress in Barbados on this subject.

ADDITIONAL LAND FOR CANE BREEDING

281. The Chairman informed the Committee that, in view of the expansion of the work of the Station, an additional area of about five acres of land would be required for the cane breeding plots at Groves.

282. The Committee authorised the Chairman to negotiate for the purchase or lease of a suitable area.

FINANCE

(a) PERSONAL ALLOWANCE TO MR. C. B. FOSTER

283. The Committee authorised the payment to Mr. C. B. Foster, Senior Agricultural Assistant in the Department of Science and Agriculture in Barbados, of a personal allowance at the rate of £75 per annum from the funds of the Station with effect from 1st October, 1950. The Committee requested the Chairman to seek the approval of the Government of Barbados for the payment of this allowance to Mr. Foster.

(b) LOANS FOR THE PURCHASE OF MOTOR CARS

284. The Committee authorised the Chairman to make loans from the funds of the Station to its officers for the purchase of motor cars on the same terms as those available to officers of the Government of Barbados under the Public Officers' Loan and Travelling Allowances Act, 1948.

(c) PROVIDENT FUND

285. With reference to minute 48, the Committee decided that from 1st October, 1950, all full-time monthly-paid employees of the Station should be eligible to join the Provident Fund Scheme on completion of one year's service.

(d) SUBSISTENCE ALLOWANCE

286. With reference to minute 262 (b), the attention of the Committee was drawn to the fact that the Governments of all the member Colonies, with the exception of Barbados, grant a subsistence allowance of not less than £2 1s. 8d. per day in addition to actual transport and board and lodging expenses to officers attending regional conferences. The Committee accordingly agreed that the subsistence allowance payable to members of the Committee and to the Botanist in respect of this and subsequent meetings shall be actual expenses of board, lodging and transport plus an allowance of £2 1s. 8d. per day.

(e) INVESTMENT OF SURPLUS FUNDS

287. The Committee authorised the Chairman to arrange from time to time for the investmen of any surplus funds of the Station on deposit in Barclays Bank (D. C. & O.)

FINANCIAL STATEMENTS

288. The Committee approved of the appended financial statements.

ESTIMATES OF EXPENDITURE

For the Cane Breeding Station Financial Year Oct. 1950 to Sept. 1951

Item	Voted 1949—50	Expenditure 1949—1950	Estimates 1950—1951	Estimated Expenditure on Cane Breeding by the Barbados Gov. 1950—51	Estimated Total Expenditure on Cane Breeding 1950—51
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Recurrent					
Personal Emoluments:					
Chairman	100 0 0	100 0 0	100 0 0	—	—
Botanist	850 0 0	850 0 0	880 0 0	—	—
Two Agric: Assistants	783 10 0	783 6 8	818 10 0	—	—
Three part-time Agric. Assistants	155 0 0	150 5 0	240 10 0	—	—
Clerical Assistance	60 0 0	56 5 0	56 10 0	—	—
Statistical Clerk ...	281 10 0	281 5 0	296 10 0	—	—
Steno-Typist ...	177 10 0	177 10 0	187 10 0	—	—
	2,407 10 0	2,398 11 8	2,579 10 0	3,018 0 0	5,597 10 0
Provident Fund ...	210 0 0	159 0 0	218 0 0	—	218 0 0
Seedling Trials ...	3,335 0 0	3,182 10 0	3,900 0 0	3,752 0 0	7,652 0 0
Stationery and Library ...	200 0 0	100 0 0	150 0 0	100 0 0	250 0 0
Travelling ...	525 0 0	400 0 0	*1,300 0 0	650 0 0	1,950 0 0
Incidentals ...	125 0 0	125 0 0	200 0 0	84 0 0	284 0 0
Capital	750 0 0	27 10 0	—	—	—
	£7,552 10 0	6,392 11 8	8,347 10 0	7,604 0 0	15,951 10 0
2. Non-Recurrent	(To be expended from Reserve Funds, Minute No. 218)				
(a) Motor Lorry ...	—	—	800 0 0	—	800 0 0
(b) Road construction	—	—	200 0 0	—	200 0 0
(c) Publications ...	—	—	200 0 0	—	200 0 0
(d) Additional land ...	—	—	800 0 0	—	800 0 0
	—	—	2,000 0 0	—	2,000 0 0

*This figure is high because of high cost of passages for members of the Committee attending the Seventeenth Meeting in Jamaica in October, 1950.

BRITISH WEST INDIES CENTRAL SUGAR CANE BREEDING STATION

Statement of Receipts and Payments for the Cane Breeding Station during the financial year October, 1949 to September, 1950

Savings brought forward	£	434	2 10

RECEIPTS 1949—50

Received from Member Colonies in respect of contributions due for the Station's financial years as set out below :

1948—49			
Jamaica (Govt.)	£1,410	0	0
,, (S.M.A.)	1,000	0	0
Trinidad (Government)	*200	0	0
1949—50			
British Guiana	2,400	0	0
Leeward Islands	764	16	2
Trinidad (Government)	1,000	0	0
,, (S.M.A.)	1,000	0	0
Windward Islands	135	0	0
1950—51			
Leeward Islands (Antigua)	316	8	6
Windward Islands (St. Vincent)	12	10	0
	£8,672	17	6

PAYMENTS 1949—1950

Personal Emoluments :					
Chairman	£	100	0 0		
Botanist		850	0 0		
Two Agric. Assts.		783	6 8		
Three part-time Agric. Assts. ...		150	5 0		
Clerical Assistance		56	5 0		
Statistical Clerk		281	5 0		
Steno-Typist		177	10 0		
				£2,398	11 8
Provident Fund	£	159	0 0		
Seedling Trials		3,182	10 0		
Stationery and Library... ...		100	0 0		
Travelling		400	0 0		
Incidentals		125	0 0		
Capital		27	10 0	£3,994	0 0
				£6,392	11 8
Balance of receipts over payments				2,280	5 10
				£8,672	17 6

* Balance of contribution for 1949

BRITISH WEST INDIES CENTRAL SUGAR CANE BREEDING STATION

STATEMENT OF CONTRIBUTIONS APPROVED, PAID AND DUE

	Approved rate of annual contributions	Amount paid in respect of the Stations Financial Years		Arrears due
		1948—49	1949—50	
	£	£	£	£
Member Colonies :				
British Guiana	2,400	2,400	2,400	—
Jamaica	2,410	2,410	Nil	2,410
Leeward Islands	770	764	764	—
Trinidad	2,000	2,000	2,000	—
Windward Islands	135	135	135	—
	7,715	7,709*	5,299	2,410
		Reserve Fund		
Foreign Countries :				
Martinique	—	—	—	200
Guadeloupe	—	—	—	200
Dominican Republic	—	—	—	1,000
Venezuela	—	—	—	200
	—	—	—	1,600

* This total does not represent actual receipts during the Cane Breeding Station's financial year 1948—49 since certain additional amounts representing arrears for 1947—48 were also received.

RESERVE—FUND

Revenue 1949—1950

Received during the financial year 1949—50 *from foreign countries in respect of contributions due for the Station's financial year as set out below :—*

	£	s.	d.
Amount brought forward	1,815	11	9
1948—49*			
Martinique	200	18	8
Guadeloupe	198	19	2
Dominican Republic	997	6	6
Venezuela	198	19	2
Balance carried forward at 30th September, 1950	3,411	15	3

* Refers to the financial year of the Cane Breeding Station, October to September.

APPENDIX (MINUTE 265)

BRITISH WEST INDIES CENTRAL SUGAR CANE BREEDING STATION

A Review of the Organisation and a Statement of Policy

A. ORGANISATION

1. Historical

From the published records, it appears that the first experimental work with sugar cane varieties in Barbados was commenced in 1884, when planting material of twelve different varieties was imported from Jamaica. This material was sent to J. R. Bovell, who was then Superintendent of Dodds Reformatory. Other canes were subsequently introduced from British Guiana, from Trinidad and one variety from St. Kitts. These varieties were introduced with the object of finding a variety to replace the Bourbon cane which had become very susceptible to the rind and root diseases. The first report of reaping the various imported varieties was published in 1888 by J. B. Harrison and J. R. Bovell.

In the year 1859, J. W. Parris, a Barbadian planter, reported in the local press that he had established canes from seedlings found growing in a field of ratoons. Other planters subsequently verified this discovery but, although its significance was realised, the cultivation of self sown seedlings was not undertaken systematically until 1888 by Harrison and Bovell The first seedlings to be raised were found growing in a field at Dodds, but this method was soon replaced by collecting and planting the fuzz of cane arrows. Later, steps were taken to identify the seedlings by recording the names of the seed-bearing parents. For the whole period 1888—1925, the essential foundation breeding stock was the variety White Transparent, although Bourbon and other imported varieties had been used to a limited extent.

From about 1900 to 1925 various methods of effecting hybridisation were tried, including the emasculation of the unopened cane flowers. However, it was not until the cane arrow lantern was developed by J. P. D'Albuquerque and C. C. Skeete that a satisfactory and sure method of hybridisation was obtained.

During what may be called Bovell epoch, i.e., 1888—1925, ten excellent seedlings were produced in the first 25 years, and these included B.H.10 (12) and Ba.11569. During the next fifteen years only one seedling of commercial importance was produced, namely, B.726. In other words, as time went on, it was becoming more and more difficult to produce new varieties which were better than the existing commercial standards. Although not realised at the time, this was partly due to the excellence of the new seedlings and partly because most of the variations in characters, which the noble cane breeding material used in Barbados was capable of producing had already been obtained.

With the re-organisation of the Barbados Department of Agriculture under J. P. D'Albuquerque, it was inevitable that the existing methods of producing seedling canes should be examined carefully and critically. This examination resulted in the introduction of many innovations and developments, which were carried out under A. E. S. McIntosh, who was appointed Botanist in 1928.

First, it was decided that hybridisation should be adopted as the only method of obtaining seedlings, so as to obtain the maximum amount of variability in the seedling populations, and a knowledge of their parentage.

The next important innovation was to test populations of seedlings from distinct crosses so as to assess the value of each particular cross for the production of seedlings.

It was also realised that the possibilities of the Barbados breeding material, composed as it was of purely noble canes, i.e., canes of the species *Saccharum officinarum*, had been very thoroughly explored over the past forty years, and in order to increase the range of variability of the seedlings, it was realised that fresh blood must be introduced. A great range of breeding material has been introduced since 1925, including many of the original wild species of *Saccharum* as well as various nobilisations and other hybrids.

It is important to recall in any historical account of cane breeding that the production of seedling canes was carried out for many years in British Guiana. The work was begun by J. B. Harrison in 1889 and continued until 1945 when this Colony became a member of the Central Cane Breeding Station. During this period, a number of successful commercial varieties was produced. In Trinidad and Jamaica breeding work was also carried out for many years, but neither of these colonies succeeded in producing a commercial cane. The seedling canes produced in Barbados proved to be highly successful in many of the other West Indian Islands, where they soon became standard commercial canes.

The excellence of the work carried out by the Barbados Cane Breeding Station was recognised at the West Indian Conference of Agricultural Officers held at the Imperial College of Tropical Agriculture in Trinidad in 1930, when a resolution was passed recommending that this work should be continued and strengthened. At the Sugar Cane Conference held in London under the Chairmanship of Sir Frank Stockdale in 1931, this recommendation was endorsed, and a grant of

£2,000 was made soon afterwards by the Imperial Government towards the upkeep of the Station. At the same time, proposals were made to establish a Central Sugar Cane Breeding Station for the British West Indies in Barbados. These proposals were approved by the Secretary of State for the Colonies, and the Station commenced to function in 1932.

From 1932, an annual grant of £2,000 was made until 1936, when it was reduced by one-half, and the other half was contributed by Trinidad, Jamaica, the Windward and Leeward Islands. In 1937, the entire grant was subscribed by these colonies, and it was increased to £2,500 in 1938. British Guiana became a member colony in 1945. Owing to increased costs of operation due to the war, subscriptions were increased in 1945 to £4,335 and in 1947, to approximatey £7,000. The cost to the Barbados Government is roughly equal to the amount subscribed by the member colonies, although the proportion was somewhat higher in the early days of the Station.

In recent years, Guadeloupe, Martinique, Venezuela and the Dominican Republic have made annual contributions to the funds of the Station in return for planting material of the more outstanding varieties.

2. ADMINISTRATIVE

1. *The Advisory Committee*

(a) The Director of Agriculture, Barbados, is the Chairman of the Advisory Committee and the Administrative head of the Station.

(b) The Committee advise the Chairman on questions of administration, policy and finance, represent the interests of the Member Colonies and receive and consider the reports of the Botanist and Cytogeneticist.

(c) The Advisory Committee consists of the Principal of the Imperial College of Tropical Agriculture, the Directors of Agriculture of member colonies, or their nominees, a representative nominated by the four colonies of the Windward Islands, and Sir John Saint, Kt., C.M.G., O.B.E.

The Chairman may invite to any meeting of the Advisory Committee, a representative to be nominated by the B.W.I. Sugar Association, the Sugar Agronomist on the staff of the Development and Welfare Organisation, and any other person at his discretion.

The Cytogeneticist and Botanist of the Station attend meetings of the Committee.

2. *Meetings of the Advisory Committee*

Meetings of the Committee are normally held annually. In recent years they have been held immediately after the meetings of the B.W.I. Sugar Technologists, in whichever of the colonies these latter have taken place.

3. *Contributing Territories*

The following British sugar-producing territories are member colonies :—

Barbados	Leeward Islands
British Guiana	Trinidad
Jamaica	Windward Islands

Nominal contributions are received annually from the following foreign territories :—

Dominican Republic	Martinique
Guadeloupe	Venezuela

In the case of the member colonies, the rates of contribution are decided on the recommendation of the Committee. The following contributions are received annually, in addition to the expenditure of approximately £7,500 by the Barbados Government on the work of the Cane Breeding Station.

British Guiana	£2,400 contributed by the Sugar Producers' Association
Jamaica	£2,400 contributed by the Government (£1,400) and the Sugar Manufacturers' Association (£1,000).
Leeward Islands ...	£770 contributed by Government.
Trinidad	£2,000 contributed by the Government and the Sugar Manufacturers' Association in equal proportions
Windward Islands ...	£135 contributed by Government.

At present the following annual contributions are being received from foreign countries :—

Dominican Republic ...	£1,000 contributed in equal proportions by the Ozama Sugar Company and the South Puerto Rico Sugar Corporation.

Guadeloupe	...	£200 contributed by the Syndicat de Producteurs —Exportateurs de sucre et de Rhum de la Guadeloupe et Dependances.
Martinique	... ...	£200 contributed by the Syndicat General des Planteurs et Manipulateurs de la canne.
Venezuela	... ...	£200 contributed by Government.

These contribution rates are subject to revision from time to time by the Committee.

4. *Accommodation, land and equipment*

The offices and laboratories of the Station are at the Department of Science and Agriculture, Bridgetown.

The breeding plots are situated at Groves Agricultural Station, St. George, where the Station owns 8½ acres of land, about half of which is planted each year in variety plots to supply arrows for breeding.

The Seedling nurseries and propagation plots are at Codrington Experiment Station, St. Michael, where in addition to the Government land which is available for seedling testing, the Station owns 34 acres, part of which was bought with a grant form the Colonial Development and Welfare Organisation.

The Station owns all equipment necessary for breeding and seedling propagation work, including 120 breeding lanterns, seedling boxes and pots, overhead irrigation equipment, and a motor lorry. The Cytogenetics Laboratory, built and furnished by means of funds made available by a Colonial Development and Welfare Research Grant, is fully equipped for cytological, pathological and botanical investigations. Equipment has been obtained for illumination experiments for the control of arrowing on a field scale.

5. *Staff*

Staff at present paid from the funds of the Station are the Botanist, two Agricultural Assistants, two part-time Agricultural Assistants, a Statistical Clerk and a Steno-typist. Members of the staff of the Department of Science and Agriculture are available for assistance in sugar cane testing work, and close co-operation is maintained with the Department at all times.

The Cytogeneticist is paid from a Colonial Development and Welfare Research allocation.

B. POLICY

1. Breeding Material

The breeding varieties consist of locally produced and introduced noble varieties (*S. officinarum*), introduced nobilisations and wild species of *Saccharum*, and nobilisations made in Barbados. They represent a comprehensive and valuable collection of about four hundred varieties, assembled over a period of many years from several different countries.

2. Introduction of Varieties from abroad into the Caribbean Region

It is proposed to make further introductions of breeding varieties from time to time. Until such time, however, as the Plant Quarantine Station in Trinidad is again in operation, the Committee has decided, in consultation with the Quarantine Committee, that no introduction of varieties from outside the Caribbean area shall be made. When the Quarantine Station is again functioning, all such importations shall be made through that Station.

3. Distribution of Varieties

(1) *Distribution from the Station*

The member colonies receive recommended selections from the Barbados Second Year Trials. The actual numbers of varieties sent depend largely on the facilities available for testing them in the individual colonies.

British Guiana receives in addition to the varieties for general distribution, special selections from short-season trials. A certificate is supplied annually to British Guiana about three months after the seedling consignment, stating whether mosaic disease had appeared in the stools from which the planting material was cut.

Jamaica receives in addition to the normal annual consignments, about 500 seedlings from selected crosses in the nursery, for mosaic disease testing and subsequent trial in Jamaica. Arrangements have recently been made to supply Jamaica with fuzz from selected crosses for seedling raising in that colony in order to produce mosaic-resistant varieties there, and to provide information on mosaic resistance to guide the breeding work at the Station.

Foreign contributors to the Station receive the best potential commercial varieties.

Planting material has been sent to the following non-contributing territories :— Washington, Mauritius, British Honduras, Cayenne, The Argentine, Mexico, Kenya and the Gold Coast. Other countries have been supplied from the Trinidad Quarantine Station.

Seedlings are normally distributed from the multiplication plots at Codrington about October. Consignments are made by air.

(2) *Distribution from Contributing Territories*

All request made to the contributing territories for Barbados varieties should be referred to the Chairman of the Advisory Committee.

4. New Applications from Foreign Countries

In the case of new applications for Barbados varieties by non-contributing foreign countries the policy is as follows :—

(a) In the case of countries outside the Caribbean area, varieties selected as first year seedlings ten years or more previous to the date of application are distributed without restriction (i.e., at present seedlings up to and including the B.40' series).

(b) For countries within the Caribbean area, specified recent seedlings are supplied at a nominal charge of £50 per variety for trial under the conditions of the applying country. At the same time, applicants are informed that further seedlings can only be supplied if the applicant becomes a regular contributor to the Station, in which case the rate of annual contribution would be determined by the Advisory Committee. In fixing such contributions (which are nominal) the Committee takes into consideration the average sugar production of the applying country.

(c) Countries which are prepared to exchange varieties with the Station (e.g., U.S.A.) can obtain Barbados varieties on application, but are asked not to distribute them unless they have been selected as first year seedlings ten years or more previous to the date of application.

5. Breeding Policy

The policy is to develop improved varieties suitable for cultivation in the British Caribbean area. The range of conditions served is wide, and in some cases, particular breeding schemes are required for particular regions, e.g., short-season varieties for British Guiana and mosaic-resistant varieties for Jamaica. In the general breeding programme, the policy is to increase the genotypic variation in the seedling populations by nobilisation and inter-crossing between different nobilisat ion lines, and to submit the seedlings to a thorough and careful selection scheme. Evaluation of particular crosses is by means of the progeny test.

6. Cytogenetics Research

The Cytogeneticist assumed duty in June 1949, and in addition to visiting various contributing territories, has supervised the building and equipping of the Laboratory. The Cytogenetics research programme was submitted to, and approved by, the Advisory Committee at the 1949 meeting. It consists briefly of :—

(a) on the laboratory side, a cytological examination of the breeding material, and

(b) on the field side, of the production of pure lines by selfing and sib-crossing, with the object of building variety types of known genetic constitution.

7. Visits

Visits to contributing territories are made from time to time by officers of the Station in order to observe the progress being made with Barbados varieties, and to obtain information on variety requirements. A draft programme of visits is submitted for the approval of the Advisory Committee at the annual meetings.

Applications for special visits in connection with variety problems, should be made to the Chairman of the Advisory Committee.